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Sarah Tyson Rorer—Pioneer in Applied Nutrition[1]

MARY P. HUDDLESON[2]

Food Service Editor, The Modern Hospital, Portland, Oregon

WE ARE assembled today in honor of the birth centennials of three of the many whose teachings and attainments, whose precepts and industry, have served in diverse ways to channel human potentialities into one of the more ardent professional activities—that of the dietitian and nutritionist. Far apart in the fabric woven by Fate, some of you may say, except for the year of their birth—1849—are the three we are honoring today—Pavlov, the Russian physician and physiologist, Kjeldahl, the chemist, and Rorer, skilled exponent of the art and science of food, its preparation and use. Yet the influence of the last, whose forte was near-perfection in all that contributes to the aesthetic and nutritional enhancement of food, may attain a more far-reaching share of timelessness.

While the principles of good cookery are not static, the underlying techniques established by Sarah Tyson Rorer are generally sound today. The foods, the method of their selection, the manual dexterity, and the artfulness employed in their preparation remain basically unchanged. Only the machine age, with its increased facilities for preparation and greater year-round availability of foods in variety, has changed the culinary picture from what it was in Mrs. Rorer's day.

On the other hand her understanding of dietetics, sound as it was seventy years ago and advanced for her time, would need revision along with all scientific knowledge. It is a sobering thought that ours, too, will have changed as much or more in seventy years. Only the fine art of cookery is timeless. The cook who in the time of Plautus seasoned his dish "cunningly and elegantly" would be as welcome today as he was then, nearly 300 years B.C.

Mrs. Rorer was more than a great cook and our first dietitian. She was also a great teacher, one of those whose spoken and written words seem to carry on in an unbroken line down through the ages. We have seen in our time those destined to a like immortality.

EARLY AUTHORITIES ON COOKING

There were other notable authorities on cookery during Mrs. Rorer's era. England, then a noble land of roast beef, had its Mrs. Beeton, "the guide, philosopher and friend of countless happy homes for more than half a century." Mrs. Beeton stressed such details as carving and trussing and the serving of the roast pheasant with part of the plumage intact. Yet she dealt gently with vegetarianism. Mrs. Rorer, a woman of somewhat caustic wit and always forthright in her statements, was not so gentle. While sympathetic, she made it clear that she was willing to let the cow do some of the work.

America, too, at that time had its Marion Harland. The leisurely wordiness of those times was amply evident in Mrs. Harland's fireside chats:

"Do not scoff at that word 'profession.' Call not that common and unclean which Providence has designated as your lifework. I speak not now of the labors of the culinary department alone. . . . Practice and practice alone will teach you certain essentials, the requisite thickness of custards, the management of ovens, the right shade of brown upon bread and roast meats."

In Mrs. Harland's well-thumbed *Common Sense in the Household* was a yellowed newspaper clipping reporting a lecture by Fannie M. Farmer in a far western city. The many methods of testing the heat of the oven were discussed. "It depends greatly on the person," Miss Farmer allowed. She herself could gauge the heat by putting her hand in the oven. She added, "This is simply a matter of experience." Miss Farmer, of course, followed Mrs. Rorer.

Others such as Maria Parloa were contemporaries. All expressed a freedom of thought and speech that must have been alarming at the time. In 1880, Miss Parloa, from the confines of Boston, said: "Many think the market place not a pleasant and proper place for ladies. The idea is erroneous. My experience has been that there are as many gentlemen among

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 12, 1949, at a session commemorating the birth centennials of Kjeldahl, Pavlov, and Mrs. Rorer.

[2] The author wishes to acknowledge with gratitude the generous assistance of Mabel Dulon Purdy and Helen E. Gilson in the assembling of data on which this paper is based.

market-men as are to be found engaged in any other business." She had, even so, a nice sense of round-eyed feminine tactics, for she added, "If not a judge of meat, it is advisable, when purchasing, to tell the dealer so and rely upon him to do well by you."

MRS. RORER'S TRAINING

The 1935 edition of *Who's Who in America* lists Mrs. Rorer as "teacher, author, and editor; born in Richboro, Pennsylvania, the daughter of Charles Tyson and Elizabeth Sagers Heston; graduate of East Aurora (N. Y.) Academy; married in 1871; lecturer, food in health and disease for thirty-three years; staff, *Ladies' Home Journal*, 1897–1911." Other sources note that she was born in Richboro, October 18, 1849 and died in Colebrook, Pennsylvania, on December 27, 1937, at the age of eighty-eight years.

In what respect did Mrs. Rorer qualify as America's first dietitian? Other noted food experts were her contemporaries, still others preceded her—Juliet Corson of the New York Cooking Academy, who placed the first two teachers of cookery in the public schools of New York, and a Miss Devereaux of the New Century Cooking School formed in Philadelphia in 1878. Three female cousins of Mrs. Rorer, with ample means and minds of their own, had founded this school. Their niece, then in her late twenties, joined the first class and finished the "full course" consisting of two practical lessons a week and twenty-four demonstration lectures.

Lest today's dietitians look askance at this brief academic period, may they be reminded that prior to the founding of the American Medical Association one hundred years ago, the training of medical practitioners consisted chiefly of what was then termed apprentice training. Medical schools then offered diplomas based on training periods consisting of two courses of lectures of sixteen weeks each, with variable periods of training under a preceptor.

Mrs. Rorer, on the other hand, had unusual advantages for the period. Her father was a manufacturing chemist, and his daughter had spent many hours among the beakers and retorts of his laboratory, watching him work and no doubt asking "how" and "why." As a young student, she decided to specialize in science. For some reason, doubtless because at the time it was considered suited to the tenuous and ethereal workings of the feminine mind, she centered her attention first on astronomy. Later, she returned to her first interest, chemistry, and when her family moved to Philadelphia after her graduation from the Academy, she undertook the work necessary to be a dispenser of drugs.

MRS. RORER AS AN EDUCATOR

Marriage intervened, and the delicate health of one of her two sons directed her mind to the study of proper feeding. In 1879 she had completed her work at the New Century Cooking School. When its principal refused to give a course on diet for the sick to the students of the Woman's Medical College and the nurses of the Woman's Hospital, she was replaced by others from New York and Boston. Both, in the words of Mrs. Rorer, were "unsatisfactory to the Quaker element of Philadelphia," and she was asked to take over.

We should pause now to proclaim an historic event, in some ways as notable as Franklin's kite-flying or Watt's steaming kettle. A woman professor of chemistry was asked to speak on domestic science before the Franklin Institute—the first woman to appear on its platform—and Mrs. Rorer was invited to illustrate this lecture. When the speaker intoned, "If cabbage is properly cooked, its nourishment will be retained . . . and there will be no odor floating over the house," Mrs. Rorer dramatically displayed the cooked cabbage. In her own words, the applause that followed "was heartening."

Perhaps because of her training in chemistry, perhaps because of her keen and alert mind and her instinct for aesthetic values in cookery, Mrs. Rorer anticipated the vast research in food and feeding that were to follow.

Her career from then on was to become part of the history of home economics in this country. As a writer in the New York *Herald Tribune Magazine* for October 15, 1933, said, her name was better known in most American homes than those of presidents, statesmen, and generals. State crises might come and go, but three times a day families consumed the stews, puddings, and more fanciful dishes made according to Mrs. Rorer's precepts.

Early in the 1880's she broadened her field and founded the Philadelphia Cooking School where she could "practice dietetics unmolested." Here came Dr. S. Weir Mitchell, among other medical notables of the day, and asked her to start a diet kitchen "where physicians could send a prescription and get in return food well prepared for special diseases." A doctors' class and experimental work followed, which resulted in an invitation to Mrs. Rorer from the Medical School of the University of Pennsylvania to lecture to fourth year medical students.

While the Philadelphia Cooking School continued to graduate twelve pupils each year for thirty-three years, Mrs. Rorer was destined for wider national acclaim. One of her students, Mabel Dulon Purdy, now of New Canaan, Connecticut, recalls that her lectures on gas cookery in New York about 1890 really brought her into national prominence.

MRS. RORER AS EDITOR AND WRITER

She had previously contributed as early as 1886 as an Associate Editor to the *Dietetic Gazette* published under the auspices of the American Medical Association and in the same year had become Editor and part owner of *Table Talk*. According to Mrs. Purdy,

"her good looks, charm, poise, fearless thought, and general knowledge, coupled with her altogether fine and wholesome cookery, were the talk of the moment in and about New York at this time." Later she appeared on the Chautauqua circuit, and in 1893 she gained further prominence with her Model Kitchen at the World's Fair. That same year she launched her magazine *Household News* which, in in 1897, was absorbed by the *Ladies' Home Journal* when she became Editor of its food and domestic interests. She continued in that capacity until 1911. Until 1932 she was also a regular contributor to the Paul Block newspapers. During her fourteen years with the *Ladies' Home Journal*, she lectured in all but two of the states.

MRS. RORER'S IDEAS

Indicative of Mrs. Rorer's courage and honesty is the fact that at the peak of the great financial panic of 1893 she announced in the *Household News*: "There will be no room for nonsense, either in its reading or advertising department . . . There is no space in the advertising for quackery or questionable 'ads' that you would not like your children to read."

Nearly sixty years ago she championed the cause of margarine, contending that it was a healthful, palatable substitute for butter.

In the fall of 1893 she looked forward sadly to a Thanksgiving with "no employment . . . the expectancy of a hard winter . . . because representatives in Washington choose to play political gymnastics rather than promptly attend to a few duties as plain as the nose on their face." She continued: "If the abundant and cheap vegetables and fruits of the summer had been canned, if the thousands of quarts of skimmed milk now daily emptied in our sewers were properly utilized, none need starve. . . The great outcry among the unemployed about starving to death is more the result of ignorance . . . combined with a lot of pigheadedness as to what was or was not fit to eat."

She was alert to all means of developing what she considered "neglected" foods, such as corn. In her World's Fair Model Kitchen she demonstrated nearly two hundred recipes for maize. She did this not only to help the "isolated corn growers who are deprived of countless comforts enjoyed by people in other lines of activity" but with the idea of eventually interesting Europeans in its use. In six months she had reached 210,000 World's Fair visitors.

Nearly seventy years ago not only did she caution against the overcooking of green vegetables, but she urged the use of them both raw and cooked with the starchy vegetable at dinner, the use of whole wheat bread, and the substitution of fruits for the heavy desserts of the period which she abhorred. Said Mrs. Rorer, "Cooking is an art, not to tempt men to gluttony, but to educate and refine the palate and build well-formed individuals—not those . . . with enormous corporations to carry." She was a true gourmet: "A black turtle bean soup is one of the most elegant soups you can serve for dinner," and she did not neglect to add the sherry.

She was a realist. When advising a reader about to give a woman's luncheon, she cautioned that the guests be congenial, adding "since only about six people are ever on terms of genuine friendship, it is better to invite a larger group than ten or twelve . . . as then the opposing factions can be judiciously scattered without fear of a clash"!

Possessed of a quick and sometimes biting sense of humor, she could enjoy a joke on herself. June D. Roper of Chancellor Hall, Philadelphia, who was in her normal class sixty years ago, recalls one instance when Mrs. Rorer commented that Mr. Rorer did not mind her working, but he did object when his shirts came home from the laundry marked "Sarah T. Rorer."

MRS. RORER'S DISCIPLES

In the nineteen years from 1886 to 1905, Mrs. Rorer wrote and published sixteen or more books, her most ambitious and comprehensive being the *New Cook Book* in 1902. She also found time to travel about the country giving lectures at preparatory schools and colleges. Dr. Joseph C. Doane, now Medical Director of the Jewish Hospital, Philadelphia, recalls her visit to the Mansfield State Teachers College where he was a student. "I can still see her appearing immaculate in a white uniform on a stage that had been prepared with all the accouterments of a then modern kitchen The whole student body attended, and I still have in my possession, worn with almost half a century of residence among my keepsakes, a notebook in which are many receipts which I copied at her dictation. . . . The million of hospital patients in this country that are touched by the magic wand of institutional dietetics owe Mrs. Rorer a great debt of gratitude."

It was not dietetics alone that she taught. An old catalog of her school includes mycology, table setting, theoretical laundry work, and the chemistry of scrubbing, among other items. Dietitians would also be interested in whom she taught.

One, Martha G. Byerly, who graduated from Mrs. Rorer's school in 1891 and contributed an article on a "Chapter in the History of Dietetics" to the December, 1926, JOURNAL of this Association, was appointed "Superintendent of Diet" at the Presbyterian Hospital, Philadelphia, and later was Housekeeper and Dietitian at the Pennsylvania Hospital until 1913. She died on August 19, 1935.

Another, Mary E. Huhn, now of Saranac, Michigan, graduated in 1903 and immediately became Dietitian at the Moses Taylor Hospital, Scranton, where she served for over forty-two years. In September, 1949, she wrote, "I wish I could tell the members of our Association about Mrs. Rorer's dynamic per-

sonality and what she meant to me." Miss Huhn adds that she herself attended every meeting of this Association until 1936, and at the request of the medical director always reported our meetings to his medical staff.

Still another, Marion Barr, now of Urbana, Illinois, an 1898 graduate, after a distinguished career which included government service in the Canal Zone, was Dietitian at the University of Pennsylvania Hospital from 1914 to 1928. She writes, "It is now over fifty years since I went to Mrs. Rorer's school, but I know I enjoyed every minute of it. . . . Mrs. Rorer used to say, 'I do not care what people say about me just so they say something.' "

Mrs. Purdy, already mentioned, a 1902 graduate of Teachers College, Columbia University, continued her studies with Mrs. Rorer and for three years was her assistant in teaching, lecturing, and writing, especially in the preparation of Mrs. Rorer's *New Cook Book*. Later Mrs. Purdy contributed to *Collier's*, the McClure publications, *Pictorial Review*, *Ladies' Home Journal*, and *McCall's*, and during World War I wrote the book *Food and Freedom*.

After nearly fifty years, Mrs. Purdy's memories of Mrs. Rorer are still vivid. To her as to others Mrs. Rorer was "inspiring, thorough, deeply honest." She had a fascination and charm that held men and women alike. Her interests were broad and understanding, her mind open. (As late as 1934 when Mrs. Rorer was eighty-five, Helen Gilson reports she was teaching a class in government at Lebanon, Pennsylvania.)

To Mrs. Rorer, good cooking should be at once wholesome, epicurean, easy to manage, and economical in cost including labor. To her, the best and most for the least, without undue effort and fatigue, were the essence of good catering. Mrs. Purdy comments that never did she hesitate for an answer when teaching, never did she forget, miss, or fumble when demonstrating. She was alive to all facets of life, thought, living. Her culture covered art, politics, history, current events. She had a sense of true hospitality. Mrs Purdy writes, "I can still see her dining table set for a chafing dish supper—her hands gracefully manipulating a lobster Newburg." Mrs. Purdy adds, "Her teachings were the basis, core, color of my own work in the years that have passed."

Mabel C. Little, who was, I believe, a charter member of this Association, now of Norwalk, Ohio, was a member of the last class graduated by Mrs. Rorer and later took a degree at Columbia University. During World War I, she served eighteen months in France organizing cafeterias, hotels, and officers' clubs. Her training with Mrs. Rorer included a week's experience in which she had to plan Mrs. Rorer's meals and eat luncheon with her. She says, "It was a nervous strain and I watched every mouthful she ate." She does not say how this affected Mrs. Rorer. She tells us much more of Mrs. Rorer: how she studied biochemistry at the University of Pennsylvania and all the then known theories of dietetics at the Medical School and how Mrs. Rorer developed into a strong, healthy woman of great ability of mind and body, the result, she said, of practicing the theories in which she believed and taught.

Miss Little recalls that the year she attended Mrs. Rorer's school there were more than one hundred applicants. Only thirteen were accepted. She notes that Mrs. Rorer was "very kind to colored people. Every year she gave a scholarship in her school to a colored girl who was planning to be a teacher of her own race." Perhaps most indicative of Mrs. Rorer's greatness was her fearless and democratic spirit, her true sense of humanitarianism. No one was barred from her classes who was honest, clean, and showed a willingness to learn. Regardless of race, creed, color or class, poverty or riches, all were welcome.

MRS. RORER'S LAST YEARS

The tragedy of Mrs. Rorer's life, if tragedy there be, is that after her selfless devotion to others she had to face her closing years nearly blind, very lame, and in sadly straightened circumstances, aided only by a small pension she received from The American Dietetic Association and a fund given by her friends and associates. Even then her courage did not fail her. When she was nearly eighty-eight, in the early summer of 1937, Miss Little visited her. Her mind and memory were as clear as always. She was cheerful and interested in the careers of her friends and associates and in world events.

Later, just three months before she died, she wrote Miss Little. It was her usual strong and clear penmanship, only the lines showing a tendency to waver. "My eyes have been very bad," she wrote. "Thank you for the enclosure. I lost all the money I had saved and every gift of that kind is from Heaven." Her kindly spirit toward others, her outward view, was with her to the last, for she added, "Come again and stay longer if you can put up with our poor way of living. But I am thankful for my life. It is wonderful how I manage to keep going." She closed with this: "The frequent rains have made the country beautiful—flowers everywhere."

Belatedly, as so often happens, honor came to Mrs. Rorer from her chosen profession. In 1933 she was made an honorary member of the Pennsylvania Dietetic Association. In 1934 she spoke on "Early Dietetics" at the second annual meeting of that association. Then eighty-five and lame, she sat with the paper on her lap and never once referred to it. Mentally alert and inspiring, those who attended reported that she was the "life of the party." Truly, in the words of the introduction to her paper in this JOURNAL, Mrs. Rorer was "a true scientist and made her craft a fine art," and we honor her, with due humility, as a great woman and our first dietitian.

Food Contamination from the New Insecticides[1]

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WHEN DDT was introduced into use in this country in 1942, a new era in the field of insecticides began. Prior to that time a limited number of chemical agents had become standard pesticides, and little attention was given to the development of new insecticidal compounds. At the end of the war, when DDT was released for unrestricted civilian use, large quantities were employed for the conservation of crops, and it soon became well established that yields could be markedly increased by the application of this insecticide to crops.

The widespread use of DDT stimulated interest in the development of other chlorinated hydrocarbons with insecticidal activity, and success in this research has been indicated by the introduction of several new chlorinated hydrocarbons into practical use. The potential health hazards resulting from the use of each of these agents must be ascertained separately, because information concerning the toxicology of one member of a chemical class of compounds may not be entirely applicable to other members of the group.

While the chlorinated hydrocarbons and related chlorinated compounds constitute one group of chemical compounds in current, widespread use, a second group has come into agricultural use in this country since 1945. These are the organic, phosphorus-containing compounds whose insecticidal action was discovered by Schrader (1) in Germany during the recent war. Knowledge of the existence of this group of insecticidal agents was obtained by the British and American Technical Intelligence Committee through interrogation of German scientists in 1945. A considerable amount of interest in these new compounds was immediately manifested in this country because the organic phosphates were reported to be effective for the control of plant aphids for which DDT was proving ineffective. Thus, the organic phosphates soon came into prominent use and with their introduction new toxicologic problems have arisen.

[1] Presented before the Chicago Dietetic Association on March 15, 1950.

STEPS TO PROTECT THE PUBLIC

Several organizations are devoting a great deal of attention at present to the evaluation of the toxicologic problems, institution of control measures, and education of the medical profession and the public concerning the public health hazards coincident with the use of the new pesticides. Federal legislation was enacted in 1947 which requires all new pesticide formulas to be registered with the Production and Marketing Administration of the Department of Agriculture. Thus, agents which appear to be too hazardous for general use can be restricted to use by trained personnel or prevented entirely from gaining access to the market. This legislation, therefore, provides a means of preventing the introduction and indiscriminate distribution of new hazardous materials in the future. However, many new agents are already being extensively employed, and their efficacy for the control of plant insects has been well established. Restriction of the use of these materials would result in large losses because of decreased yields of food crops. Controls cannot, therefore, be readily instituted unless conclusive evidence of injurious effects in man or experimental animals is obtained after prolonged exposure to these materials or ingestion of contaminated food.

A considerable amount of information on the effects of ingestion of various insecticides has been obtained through the efforts of the laboratories of the Food and Drug Administration and various other organizations. The progress which has been made thus far in experimentation on the chronic effects of insecticides was recently described by Lehman (2, 3). Further studies carried out over longer periods of time using quantities of insecticides comparable with those found in food are necessary before a complete evaluation of the potential health hazards can be made.

Within recent months the Council on Pharmacy and Chemistry of the American Medical Association has organized a Committee on Pesticides to aid in public health problems arising from the use of pesti-

cides. Their interest in this subject was stimulated by a realization of the potential dangers associated with the current extensive use of large quantities of toxic chemicals in agriculture and by the desire of the medical profession to obtain information concerning the toxicity and the diagnosis and treatment of poisoning by these agents. This organization can be of great value in the dissemination of information concerning the public health problems which can result from the extensive use of insecticidal agents and in emphasizing the precautionary measures which should accompany their use.

It is apparent from the number of organizations which are engaged in research on pesticides that important toxicologic problems exist in connection with their practical use. Some of the important aspects of these problems are apparent from a consideration of the physical and chemical properties and physiologic effects of the various insecticidal compounds. This paper contains a discussion of the toxicology of the newer pesticides with special reference to factors influencing the contamination of food by these agents. The new insecticides of greatest importance at present are included among the chlorinated hydrocarbons and the organic phosphorus-containing compounds. Nearly all of the insecticides which are being introduced at present are members of one of these two groups, and it appears that general considerations regarding the chlorinated hydrocarbons and the organic phosphates may also be applicable to many of the new insecticides introduced in the future.

CHLORINATED HYDROCARBONS

The model for the development of insecticides of the chlorinated hydrocarbon series has been DDT (bis-p-chlorophenyl trichlorethane). Other chlorinated compounds which have come into prominence are benzene hexachloride, chlordane, methoxychlor, toxaphene (chlorinated camphene), and TDE (dichloro-diphenyl-dichlorethane).

Acute Toxicity. Although the chlorinated hydrocarbons vary widely in their toxicity to mammals, acute poisoning by this group is exceedingly rare and, therefore, constitutes no serious menace. From animal experimentation, the estimated median lethal dose of DDT given orally in a single dose is about 500 mg. per kilogram or about 30 gm. per man. The corresponding values for the other compounds range from 60 mg. per kilogram for toxaphene to about 7500 mg. per kilogram for methoxychlor. These agents are not well absorbed from the skin, lungs, or the gastrointestinal tract. The high single doses of these materials which are necessary to produce poisoning virtually eliminates the possibility of acute poisoning from the ingestion of contaminated food.

Chronic Toxicity. From the practical standpoint, chronic poisoning by the chlorinated hydrocarbons has been a problem of major concern since their introduction. The physical and chemical properties of this group of compounds have an important bearing on their ability to produce chronic poisoning. The chlorinated hydrocarbons are stable toward hydrolysis, and spray residues may remain on fruits and vegetables for a long time. Continued ingestion of these contaminated products may thus produce a health hazard. Furthermore, these materials are fat-soluble, and the ingestion of contaminated forage by dairy cattle results in the appearance of insecticides in the milk where they are concentrated in the fat. Upon ingestion of DDT and other chlorinated hydrocarbons, the fat solubility causes concentration in the lipoid tissues if the dietary intake exceeds the daily excretion.

Dietary levels of 100 mg. DDT per kilogram of food have been shown (2) to produce chronic poisoning in 104 weeks in rats. Liver damage is the outstanding pathologic change (2) observed in chronic poisoning by the chlorinated hydrocarbons, with the exception of methoxychlor which produces marked kidney damage. The pathology of chronic poisoning by these agents thus differs from the effects observed after acute poisoning in which excitation of the central nervous system is generally observed with the cerebral cortex and the cerebellum being involved.

Data on the chronic effects from continued ingestion of quantities of the chlorinated hydrocarbons comparable to amounts found in contaminated foods are incomplete, and long-term experiments must be conducted before an accurate evaluation of the potential dangers can be obtained. However, the data at hand indicate that chronic poisoning by these agents is a distinct possibility. Therefore, the use of concentrations in excess of the amounts necessary to protect food crops from damage by insects should be avoided, at least until experimental evidence is obtained to permit estimations of the quantities of these agents which can be safely tolerated for long periods.

ORGANIC PHOSPHORUS-CONTAINING COMPOUNDS

Three organic phosphates have come into prominence as agricultural insecticides in this country during the past four years. They are hexaethyl tetraphosphate, tetraethyl pyrophosphate, and parathion (p-nitrophenyl diethyl thionophosphate). The efficacy of these compounds as agricultural insecticides has served as the stimulus for further investigations on organic phosphates, and it is likely that new compounds belonging to this chemical group will come into use in the future. The various members of the organic phosphate group are similar in their chemical and physical properties as well as their physiologic actions. Food contamination has not become a problem with these agents because of their instability.

Acute Toxicity. The organic, phosphorus-containing insecticides are highly toxic. The estimated single lethal doses for man are between 2 and 10 mg. per

kilogram for the three compounds with tetraethyl pyrophosphate being the most toxic. They are readily absorbed from the skin, lungs, and gastrointestinal tract. Symptoms appear within a few minutes, and after lethal doses death usually occurs within a few hours. The principal action (4–6) of these compounds is a pronounced inhibitory action on cholinesterase, the enzyme which normally hydrolyzes acetyl choline. The resultant accumulation of acetyl choline causes salivation, lacrimation, miosis, generalized muscular fibrillations, and convulsions, terminating with respiratory failure and death. All of these symptoms are referable to stimulation of the central and peripheral nervous systems. The toxicologic problems associated with the use of these materials have been the result of either single exposures or multiple exposures over a period of hours or days resulting in acute or subacute poisoning.

Chronic Toxicity. Hexaethyl tetraphosphate and tetraethyl pyrophosphate are rapidly hydrolyzed in contact with moisture. Therefore, spray residues on fruits and vegetables lose their toxicity before the foods are consumed. Parathion has a somewhat greater stability toward hydrolysis than the other two agents, but it also is rendered non-toxic before foods are harvested. Thus far, there have been no indications that chronic poisoning through the use of these materials will limit their usefulness since the hydrolysis products are nontoxic.

SYSTEMIC INSECTICIDES

Among the organic, phosphorus-containing insecticides developed in Germany are a group of compounds known as systemic insecticides. These toxic agents differ from other new insecticides in that they are taken up from the soil by plants, rendering the plants insecticidal. Absorption of the materials by plants is necessary for insecticidal action, because plants convert some of these agents to insecticidal compounds whereas the materials are non-toxic to insects prior to absorption by plants. In this respect they differ from parathion, tetraethyl pyrophosphate, and other alkyl phosphates which are highly effective insecticides and are not taken up and retained in a toxic form by plants.

A considerable amount of interest has been exhibited in England during the past year (7, 8) in the possible practical applications of systemic insecticides for the protection of crops, and during recent months systemic insecticides have attracted considerable attention in this country, although they have not yet come into practical use. A compound which has become of current interest is octamethyl pyrophosphoramide (OMPA: Pestox III). There are others with similar chemical and biologic properties which can be expected to be developed in the future.

Careful attention should be given to the potential hazards associated with widespread use of systemic insecticides on food crops. The unique properties of substances like octamethyl pyrophosphoramide make them more hazardous than the organic phosphate in use at present as contact insecticides. Thus, such factors as the ability of the material to be absorbed by plants immediately brings up the possibility of food contamination. The insecticidal agent formed within plants from octamethyl pyrophosphoramide loses its toxicity rapidly, rendering the plants non-toxic to insects by the time the plants reach maturity. However, vegetables which are harvested prior to the time of cessation of growth of the plants could be dangerously contaminated by systemic insecticides.

In order to ascertain the possible dangers from the use of systemic insecticides, toxicologic and pharmacologic studies on these agents were necessary. Therefore, we have recently conducted an investigation (9) on octamethyl pyrophosphoramide, and a consideration of our findings indicates some of the health hazards which might result from indiscriminant use of these new insecticides.

Acute Toxicity. Administration of octamethyl pyrophosphoramide to animals has indicated that the median single lethal dose is around 10 mg. per kilogram by the oral route of administration. The compound is well absorbed from the gastrointestinal tract. It causes inhibition of cholinesterase as do the other organic phosphorus-containing insecticides but differs from the other phosphates in several important respects. Thus, octamethyl pyrophosphoramide is not a cholinesterase inhibitor but is changed by the liver into a compound which inhibits the enzyme. It is also converted within plants to an anti-cholinesterase agent. This active metabolite is rapidly hydrolyzed and thus detoxified both in plants and animals. The ability of the liver to change octamethyl pyrophosphoramide into a toxic compound indicates that ingestion of plants containing the compound could result in poisoning.

Octamethyl pyrophosphoramide does not affect the central nervous system, and the symptoms of poisoning are referable only to stimulation of the peripheral nervous system. The symptoms after sublethal doses persist considerably longer than those produced by parathion and tetraethyl pyrophosphate. From these findings it would appear that caution should be exerted during the use of these materials to avoid the possibility of acute poisoning.

Chronic Toxicity. The possibility of continual ingestion of small quantities of systemic insecticides is greater than with any of the organic phosphates now in use, because these materials are insecticidal by virtue of their ability to be taken up by plants. Since we have demonstrated that the active compound formed from octamethyl pyrophosphoramide within plants is unstable, it might be assumed that consumption of the plant would involve no health hazards. Such an assumption would appear to be correct *if* all material absorbed by the plant is converted to the unstable active agent and hydrolyzed before the food is consumed. However, if any octamethyl

pyrophosphoramide remains unchanged in the plant, it will undergo conversion by the liver to a toxic compound after ingestion.

Experiments now underway indicate that a cumulative toxic action results from the continued ingestion of octamethyl pyrophosphoramide. However, small daily doses can be tolerated for long periods. Further studies must be conducted in which low dietary levels of octamethyl pyrophosphoramide are fed for long periods of time in order to obtain an accurate evaluation of the potential dangers involved in its use. Meanwhile, since the systemic insecticides present the possibility of food contamination and are highly toxic, it would seem advisable to restrict their use at least for the present to plants not employed as food or to food crops which are never harvested before maturity.

SUMMARY

Within recent years a large number of new insecticides have come into extensive agricultural use. Nearly all are either chlorinated hydrocarbons and related chlorinated compounds or organic, phosphorus-containing compounds. Since these materials are widely used on fruits, vegetables, and forage for livestock, a consideration of the possible health hazards from contaminated foods has become of importance. The toxicologic information now available allows some estimation of the potential dangers, but further detailed studies on most of the new compounds are necessary in order to obtain an accurate evaluation of the possible health hazards.

In the case of the chlorinated hydrocarbons such as DDT, acute poisoning from single doses is rare. However, chronic poisoning from continued ingestion of the materials is demonstrable in animals, and the stability of these agents, together with their tendency toward accumulation and storage in the tissue lipoids, places emphasis on the necessity of avoiding food contamination through the use of excessive amounts of these materials. Information regarding the possible effects of ingestion of small quantities of these agents over long periods of time must await the results of further experimentation.

With organic, phosphorus-containing compounds now in use, acute poisoning has been the problem of major concern. The tendency of these insecticides to undergo rapid hydrolysis to non-toxic materials in the presence of moisture makes chronic poisoning unlikely. Thus far, no evidence indicating the possibility of poisoning through food contamination by the organic phosphates used as contact insecticides has been obtained.

The organic phosphates which are systemic insecticides by virtue of their ability to be absorbed by plants are more hazardous than the other organic phosphates, and it appears that these new agents should be employed with caution to prevent the possibility of accidental poisoning.

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New Tests for Determining Lipolytic Activity in Milk

Basic research in the Bureau of Dairy Industry, directed toward the prevention of lipolytic activity in dried milks and the resultant development of rancid flavor, has produced two promising methods for detecting the presence of lipolytic enzymes in milk.

The most promising method consists of adding naphthyl fatty acid esters to the milk and incubating it for 2 hr. at 37°C. Precipitation of the proteins gives a clear filtrate and the addition of 2–6 dibromoquinone produced a purplish blue color, the intensity of which is determined with a colorimeter. The intensity is proportional to the amount of lipase.

The other method is similar except that resorcinol esters are used, the resorcinol yellow color being developed by the addition of sodium nitrate. Work will be continued to develop the details of the methods, with a view to developing a more sensitive test.—*From Report of the Chief of the Bureau of Dairy Industry, U. S. Department of Agriculture, 1949.*

A Fuller Use of Specialists in Producing Educational Films

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EDUCATORS, industrialists, statesmen—all acknowledge the need for cooperative endeavor among specialists in order to achieve desired goals. Those whose province is mass communication are particularly responsive to values attainable from such cooperation. The motion picture, the radio, and the press are among the most important of all the media of mass communication. Let us consider just one such instrument, the educational motion picture, and let us see how specialists work together to produce an effective film. From this consideration of one kind of educational endeavor, generalizations applicable to the preparation of all types of educational materials can be deduced.

Two major facets of specialization enter into the creative development of almost any educational device such as the motion picture. One consists of techniques, the other subject matter. Little will be said here regarding those motion picture techniques involving manipulative skills. The elements of such skills are nearly always controllable. The array of photographic processes and optical effects available not only guarantee effective coverage of almost any subject but frequently can provide a sense of continuity that an on-the-spot witness would have difficulty attaining. But technical skills alone cannot make a good film. In addition to these, there must be a body of subject matter that is authentic, ideologically clear, and well organized. Here, then another kind of specialist enters—the collaborator.

Who is this collaborating specialist? Can he be the film producer? Conceivably the producer, a specialist in his own right, could serve as his own subject matter expert if the given film were in his field of special competence. But this is an unlikely situation. And, unless he is an expert in the area, he may make errors of interpretation even though his facts are accurate. Especially is this true in motion pictures where facts are demonstrated visually as well as stated orally. The producer must enter into cooperative alliance with one or more other specialists in order to guarantee a product that is authentic and acceptable contentwise.

Where are such collaborators to be found? The university usually ranks highest among the potential sources. Here are found men and women of special attainments who are recognized as specialists in their particular fields of endeavor. Besides, it is unlikely that such persons will be suspected of promoting one point of view over another for political, religious, or commercial purposes. Obviously, the university is not the only source of collaborators. Learned societies, foundations, government agencies, and other kinds of institutions often have personnel capable of such collaboration.

What kind of collaborator should be chosen? The answer depends upon what specific kind of specialization the picture requires. No one pattern or formula exists that can be applied equally well to all different films. After identifying the requirements of the individual film, the most appropriate kind of collaborator can be named. Considerations such as these arise: Does the film require a collaborator whose name is widely recognized in conjunction with the subject of the film? The problem of alcoholism is one such subject. Because of the recency of most objective research in this area, the collaborator should be a man whose personal work is widely recognized by his peers and will thus be accepted. Does the area to be considered involve dissenting interpretations even among qualified experts? The meaning of democracy is such a topic. Does the film treatment seem to hinge upon a detailed knowledge of procedures or processes such as, for instance, the making of detergents? This may require a collaborator who has had experience with the actual operations to be demonstrated. Or would the better choice be a collaborator who is master of the theoretical aspects of a subject; i.e., the action of enzymes in digestion?

THE COLLABORATOR'S WORK

When the collaborator is finally selected, what assignment shall be made to him? Here again there's no standard approach. One technique has the producer explain briefly his point of view and, in turn, request the collaborator to provide:

(a) A theme for the proposed film, stated as succinctly as possible.

(b) A one-page brief including key ideas to be developed. One sort of brief that is very helpful suggests principal episodes that can be developed out of the proposed theme.

(c) A list of selected references on the subject together with one or more sentences stating what special merits each possesses.

THE PRODUCER

With such data, the producer can tentatively limit his subject and begin developing his own background of appropriate subject matter. The question may arise as to why the producer should develop a background of subject matter information when he has a subject matter specialist to aid him. The answer is simple. Unless the producer understands the subject, he cannot possibly present it effectively as a film. In this process of learning, the collaborating specialist is the guide. Later on, the collaborator also evaluates the material the producer prepares and judges its authenticity and applicability. When the producer has mastered the subject, and only then, is he in a position to prepare a film treatment that takes the proposed picture out of the illustrated-lecture stage. It takes more than verbalism to reveal the truths needed to develop an effective film. The film medium is particularly adept at exposing partial truths—truths that may seem completely adequate when presented in their audio-dimension alone.

With data mastered, it must next be translated into the film medium. This is essentially the producer's problem as a specialist in film communication. Often the collaborator has an important part in this, too. The collaborator's teaching and experiences with experimental work make it possible for him to envision how this kind of development will be received by learners. At this point, other specialists may be required. The collaborator and the producer should not hesitate to invite others to bring their experiences to bear upon the problems involved, if such help seems to be desirable. Later, we will see how this works.

PROBLEMS OF COLLABORATION

What are some of the possible pitfalls in the path of effective collaboration? Basically, the all important one lies in the fact that two or more experts of divergent training and experience may have difficulty in settling upon specific objectives. Lack of effective cooperation will produce one of the following three situations: (a) The collaborator may dominate the situation to the point that the completed film is top heavy with content—accurate, but withal, ineffective. The material presented may be good—even excellent—in terms of a lecture but still ineffective as a film. It has not realized the most from the motion picture medium. (b) The producer may dominate the production. An educational film loaded with technique but weak subject-wise is as ineffective as a film overburdened with subject matter. (c) There's yet a third category—the production in which both techniques and content suffer. Inadequacy of producer and collaborator or unwise compromises may lead to the downfall of the final product.

How can desirable collaboration be assured? Part of a happy solution has been suggested. The producer must first gain sufficient control of subject matter to understand and discuss content effectively. Only then can he act effectively in his role as a specialist in motion picture communication. Second, both the producer and the collaborator must attain a ground of common understanding. Significant in any kind of cooperative venture, such understanding is absolutely essential here. Only then can each person contribute to the fullest possible extent on the particular aspect of the problem in which he is most competent. To make this possible, the purposes of the project must be clear and there must be a willingness to consider each problem impartially. Then, if the participants think that their total competence does not quite add up to a thoroughly satisfactory solution, others should be consulted.

AN EXAMPLE OF EFFECTIVE COLLABORATION

Let's now consider how these concepts apply to a specific case history. A film on teeth is assigned to the producer. The picture is to be made for children of the middle and primary grades. Named as collaborator is Dr. J. Roy Blayney, Director of the Walter G. Zoller Memorial Dental Clinic, The University of Chicago. Dr. Blayney, an authority in the fields of dental therapeutics and pathology, has a vital interest in educating the public in proper care of teeth. He stresses the significant role of refined sugar in tooth decay. Growing out of a discussion with the collaborator of the overall problem of caring for the teeth, the following theme develops. "The proper care of teeth depends upon a combination of brushing, controlled use of sugar, and treatment with fluoride solution." This is a clear statement of three main parts of the proposed film. The collaborator identifies the principal sources of literature—in this instance papers appearing in scientific publications. The collaborator and the producer "rough in" subject matter content and consider three settings or locations around which to organize it. They also formulate the plan of using the dialogue of the speakers themselves rather than the voice of a narrator to describe what happens.

Now the producer goes into action independently. He reviews the literature suggested by the collaborator. He pays special attention to the problem of sugar and to the value of fluoride treatment. He develops a tentative story for the film that orients itself around a case history. The story indicates the treatment of events and suggests the dialogue.

The collaborator and producer confer again. Modifications of the treatment are made. A decision is made to stage the film in a dentist's office. This is an "attitudes" film. The dentist is an expert well qualified to teach, so his office is the logical setting. The role of the dentist begins now to take shape within the structure of the picture. Consideration is given to the techniques he must demonstrate.

By the third meeting between collaborator and producer, both dialogue and pictorial content are nearly complete. At this point, several problems arise: (a) Many children fear the dentist. How can the film help alleviate the misconceptions that lead to fear of the dentist? Is anything said in the proposed film that might instill fear? (b) Is the proposed content of the film appropriate for its prescribed grade levels? (Neither the collaborator nor the producer has ever taught middle grades children or elementary classes.) (c) What will members of the dental profession think of the film? Will they support it? Will they agree that emphasis on the sugar problem and the importance of fluoride treatment are justified? (d) Are the dietary aspects of the proposed picture acceptable to leading dietitians? Do the suggestions made in the film for effective care of the teeth seem realistic to persons familiar with case histories that reveal what children will remember and practice?

Here are problems requiring further collaboration —a fuller use of specialists. A call for further collaboration is made, and a special conference results. Attending the conference is a professor of psychiatry, an authority on the fears of children. There are two leading teachers—experts on subject matter placement—and two members of the dental association. A leader in the field of dietetics joins the group to consider aspects of a dietary nature that apply to the proposed film. And a case worker from a leading dental clinic lends an additional background of specialization. Out of the meeting come recommendations on all major points. These are not merely compromises but statements agreed to by those present on the basis of personal experiences and information brought out in discussion. As the major result of the meeting, reconsideration is made of several parts of the film. Later, copies of a revised script that include the new interpretations are sent to each member of the conference. In a day or so, the collaborator collects their responses. Then he and the producer evaluate these final suggestions. With these data at hand, the producer writes his shooting script, and the film is ready for the camera.

SHOOTING PROBLEMS

Now a different group of problems arise. How should the dental office in the picture be set up? What equipment should it contain? Other experts are called upon to help solve these problems, including a representative of a leading dental supply house and a decorator familiar with the decorative combinations used in fine modern dental offices. After these problems have been solved, final instructions are given for constructing the dentist's office to be used as the motion picture "set."

EVALUATION

After the picture has been filmed and edited, as many as possible of the original conferees sit in on an evaluation session. Only a few minor suggestions arise. The groundwork has been thorough, and the product passes inspection well. The important point for our present discussion is to note that the producer, collaborator, and other specialists have here been able to join forces to the end of producing an important educational instrument. The producer has translated specified ideas into a film pattern. Because communication throughout has been clear and related to specific problems, fundamental misunderstandings have not arisen. Given the content originally planned, the result is authentic, appropriate—educationally effective. Some projects, of course, involve fewer individuals—often only the collaborator and the producer—but the principles of operation are similar.

COLLABORATION IN OTHER RELATIONSHIPS

In relationships outside the motion picture field, the implications are much the same. The school nurse helps establish community patterns toward the end of improving health conditions. The curriculum worker helps create courses of study. The dietitian assists a community, whether it be the school or the entire population, in its development of better dietary habits. How each program evolves and its ultimate fate in practice depends in large measure on the collaboration received in the various stages of its development and implementation. All forms of community teaching stem partly at least from a synthesis of resource materials provided by specialists. In group action, so often an integral part of any such development, the first need is for clear cut objectives. The second need is for specialists who will wholeheartedly help develop these objectives. The individual must not "prosecute or defend" ideas merely to support preconceived notions. This is one of the most important aspects of effective group collaboration and a key tenet of the science of group dynamics.

Finally, we may consider the nurse, the curriculum worker, the dietitian in much the same light as the film producer. In each instance, it is this specialist who implements the final program whether it is a health program, a course of study, a dietary project, or a film. Other specialists help him become suitably educated in a given area or areas so that he may effectively translate subject content into his own medium of communication.

Effect of Omitting Breakfast on the Physiologic Response of Men[1]

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IN A study reported by Tuttle, Wilson, and Daum (1) on normal women between the ages of twenty-two and twenty-seven years, it was shown that the omission of breakfast resulted in a decrease in maximum work output and an increase in both choice reaction time and tremor magnitude. The experiment herein reported is a repetition of the one referred to above except that men were used as subjects. The object of repeating the experiment was to determine if the physiologic responses of men were altered in the same way as those of women, under similar breakfast patterns.

The physiologic responses used for comparing the effects of a "basic breakfast" with those resulting from "no breakfast" were as follows: (a) neuromuscular tremor, (b) maximum work output, and (c) choice reaction time.

Breakfast Classification. In arranging the basic breakfast, it was decided to include one-fourth the daily caloric requirement. Since it was pre-determined that the average daily caloric intake of the subjects was approximately 3000 calories, the "basic breakfast" was arranged to provide 750 calories. Coffee was excluded. The "basic breakfast" is given in Table 1.

"No breakfast" meant no food between 8 P.M. and 12 noon the following day.

Techniques for Measuring Physiologic Response. The techniques employed for measuring tremor magnitude, maximum work output, and choice reaction time have been described previously (1).

Subjects. Eleven university men varying in age from twenty-one to twenty-eight years served as subjects. During the experiment one subject (No. 6) became ill and was dropped from the program. All subjects lived as a group in a university cottage supervised by a proctor appointed by the university.

Design of the Experiment. The experiment was designed to determine if the omission of breakfast had any effect on physiologic responses of men. The "basic breakfast" was prepared by the Department of Nutrition at the State University of Iowa, under the supervision of dietitians. Breakfast was eaten between 7 and 8 A.M. The data were collected between 10:00 A.M. and 12 noon. Each subject was tested twice each week, always at the same hour.

TABLE 1

Basic breakfast menu

FOOD	WEIGHT	ENERGY
	gm.	*calories*
Fruit	100	50
Cereal	30	108
Whole milk (¾ pt.)	360	248
Sugar	10	40
Enriched white bread (toasted, 2 slices)	60	156
Butter	15	87
Jelly	20	60
Total		749

The sequence of the testing program was (a) reaction time, (b) neuromuscular tremor, and (c), maximum work output. Maximum work output was measured last because of its effect upon both reaction time and tremor magnitude.

Although we are aware that it is impossible to control all influencing factors in the behavior of the subjects, the academic requirements were effective limiting factors in their daily routine of living.

RESULTS

A summary of the data relative to the effect of omission of breakfast on the physiologic responses of men is presented in the discussion which follows.

The design of the experiment provided for six records of each physiologic response studied, for each three-week period. The data presented are means

[1] This work was generously supported by a research grant from the Cereal Institute, Inc., Chicago. Received for publication January 25, 1950.

TABLE 2

Comparison of the neuromuscular tremor of ten men when they ate a basic breakfast and when they ate no breakfast

BREAKFAST REGIMEN	NEUROMUSCULAR TREMOR MAGNITUDE				
	Group 1				
	Subject 1	*Subject 2*	*Subject 3*	*Subject 4*	*Subject 5*
Period 1 (basic breakfast)					
Mean (sq. cm.)	2.90	2.49	2.51	2.58	2.47
Standard deviation	0.76	0.31	0.31	0.52	0.63
Period 2 (no breakfast)					
Mean (sq. cm.)	3.02	3.49	3.54	3.70	4.54
Standard deviation	0.78	1.17	1.01	1.12	1.32
t value (Period 1 vs. Period 2)	0.25	1.84	2.10	2.03	3.18
Significance level	—	10%	10%	10%	1%
	Group 2				
	Subject 7	*Subject 8*	*Subject 9*	*Subject 10*	*Subject 11*
Period 1 (no breakfast)					
Mean (sq. cm.)	4.55	6.85	4.67	4.51	5.15
Standard deviation	1.65	1.73	1.44	1.15	1.23
Period 2 (basic breakfast)					
Mean (sq. cm.)	1.98	2.86	2.52	2.30	2.12
Standard deviation	0.42	0.94	0.28	0.48	0.43
t value (Period 1 vs. Period 2)	3.37	4.54	3.27	3.97	5.21
Significance level	1%	0.1%	1%	1%	0.1%

for the individual subjects for the period as indicated in the tables.

So that each subject served as his own control, eleven subjects were divided into two groups, five in one and six in the other. Since Subject *6* was dropped from the experiment, the second group was reduced to five subjects. During the first three-week period, Subjects *1* to *5* ate the "basic breakfast" and Subjects *7* to *11* ate "no breakfast." During the last three-week period, the groups were reversed, that is, Subjects *1* to *5* ate "no breakfast" and Subjects *7* to *11* ate the "basic breakfast."

Neuromuscular Tremor. The mean neuromuscular tremor magnitudes for both groups for the "basic" and "no breakfast" periods are compared in Table 2. The data show that the tremor magnitude of all the subjects in Group *1* became greater during the "no breakfast" period, although the difference for one subject was not significant. The data also show that the tremor magnitude for all subjects in Group *2* was significantly greater during the "no breakfast" period.

Maximum Work Output. The mean maximum work output for the two groups for both the "basic" and "no breakfast" periods is shown in Table 3. Every subject in Group *1* did more work during the "basic breakfast" period than during the "no breakfast" period although in two cases the differences were not highly significant. Every subject in Group *2* did significantly more work during the "basic breakfast" period.

TABLE 3

Comparison of maximum work output of ten men when they ate a basic breakfast and when they ate no breakfast

BREAKFAST REGIMEN	MAXIMUM WORK OUTPUT				
	Group 1				
	Subject 1	*Subject 2*	*Subject 3*	*Subject 4*	*Subject 5*
Period 1 (basic breakfast)					
Mean (kg.m.)	2950	2938	2629	2981	2757
Standard deviation	139.6	138.5	310.6	244.0	286.7
Period 2 (no breakfast)					
Mean (kg.m.)	2710	2134	2125	2645	2121
Standard deviation	464.6	326.6	94.6	490.8	294.5
t value (Period 1 vs. Period 2)	1.09	5.07	2.78	1.37	2.49
Significance level	30%	0.1%	2%	20%	5%
	Group 2				
	Subject 7	*Subject 8*	*Subject 9*	*Subject 10*	*Subject 11*
Period 1 (no breakfast)					
Mean (kg.m.)	2054	2217	1640	2120	1625
Standard deviation	49.7	386.1	63.9	132.8	120.6
Period 2 (basic breakfast)					
Mean (kg.m.)	3327	3040	3050	3556	2720
Standard deviation	467.8	303.3	146.3	244.9	336.7
t value (Period 1 vs. Period 2)	6.05	3.75	19.75	11.53	6.85
Significance level	0.1%	1%	0.1%	0.1%	0.1%

TABLE 4

Choice reaction time of ten men when they ate a basic breakfast and when they ate no breakfast

BREAKFAST REGIMEN	CHOICE REACTION TIME				
Group 1					
	Subject 1	*Subject 2*	*Subject 3*	*Subject 4*	*Subject 5*
Period 1 (basic breakfast)					
Mean (seconds)	.270	.266	.276	.265	.262
Standard deviation	.011	.013	.012	.013	.004
Period 2 (no breakfast)					
Mean (seconds)	.295	.285	.300	.269	.268
Standard deviation	.013	.012	.017	.014	.013
t value (Period 1 vs. Period 2)	3.36	2.41	2.37	0.47	1.02
Significance level	1%	5%	5%	—	40%
Group 2					
	Subject 7	*Subject 8*	*Subject 9*	*Subject 10*	*Subject 11*
Period 1 (no breakfast)					
Mean (seconds)	.276	.273	.294	.293	.248
Standard deviation	.014	.006	.011	.018	.008
Period 2 (basic breakfast)					
Mean (seconds)	.284	.300	.310	.291	.238
Standard deviation	.005	.012	.014	.016	.013
t value (Period 1 vs. Period 2)	1.19	4.59	2.09	0.18	1.52
Significance level	30%	0.1%	10%	—	20%

Choice Reaction Time. The data relative to choice reaction time for the "basic breakfast" and "no breakfast" periods are compared in Table 4. The data show that for Group 1, the choice reaction time of three subjects was significantly longer during the "no breakfast" period, while in one case there was no change and in one case the difference was not significant. For Group 2, two subjects had significantly shorter choice reaction times during the "no breakfast" period. One subject remained the same, one subject had slower and one faster choice reaction times during the "no breakfast" period, but these differences were not significant.

Body Weight. The weekly body weights of all subjects during the two periods are shown in Table 5. The data show that there were no significant weight changes when the subjects changed from a "basic breakfast" to "no breakfast," or from "no breakfast" to the "basic breakfast."

DISCUSSION

Observations of the group of men used in the experiment reported here leads to the conclusion that men react to the omission of breakfast in a more pronounced fashion than women. This is shown by the fact that they not only complain about being hungry but also show rather violent fatigue reactions following strenuous work. Dizziness, nausea, and vomiting were common among the group and were consistently experienced by two of the subjects.

TABLE 5

Comparison of the body weights of ten men for a six-week period including three weeks in which they ate a basic breakfast and a similar period in which they ate no breakfast

BREAKFAST REGIMEN	BODY WEIGHT				
Group 1					
Period 1 (basic breakfast)	*Subject 1*	*Subject 2*	*Subject 3*	*Subject 4*	*Subject 5*
1st week	150 lb. 4 oz.	154 lb. 8 oz.	155 lb. 1 oz.	161 lb. 8 oz.	170 lb. 4 oz.
2nd week	146 lb. 14 oz.	155 lb. 4 oz.	154 lb. 11 oz.	159 lb. 10 oz.	169 lb. 2 oz.
3rd week	147 lb. 10 oz.	155 lb. 12 oz.	154 lb. 14 oz.	159 lb. 14 oz.	169 lb. 8 oz.
Mean	148 lb. 4 oz.	155 lb. 3 oz.	154 lb. 14 oz.	160 lb. 5 oz.	169 lb. 10 oz.
Period 2 (no breakfast)					
4th week	147 lb. 12 oz.	154 lb. 8 oz.	—	158 lb. 14 oz.	167 lb. 8 oz.
5th week	147 lb. 13 oz.	154 lb. 14 oz.	152 lb. 14 oz.	160 lb. 0 oz.	167 lb. 1 oz.
6th week	145 lb. 15 oz.	154 lb. 14 oz.	153 lb. 5 oz.	159 lb. 13 oz.	167 lb. 7 oz.
Mean	147 lb. 3 oz.	154 lb. 12 oz.	153 lb. 2 oz.	159 lb. 9 oz.	167 lb. 5 oz.
Group 2					
Period 1 (no breakfast)	*Subject 7*	*Subject 8*	*Subject 9*	*Subject 10*	*Subject 11*
1st week	139 lb. 9 oz.	175 lb. 12 oz.	168 lb. 13 oz.	186 lb. 7 oz.	146 lb. 6 oz.
2nd week	140 lb. 4 oz.	177 lb. 6 oz.	166 lb. 11 oz.	186 lb. 6 oz.	143 lb. 12 oz.
3rd week	139 lb. 15 oz.	174 lb. 8 oz.	166 lb. 11 oz.	186 lb. 11 oz.	143 lb. 9 oz.
Mean	139 lb. 15 oz.	175 lb. 14 oz.	167 lb. 6 oz.	186 lb. 8 oz.	144 lb. 9 oz.
Period 2 (basic breakfast)					
4th week	141 lb. 10 oz.	176 lb. 8 oz.	167 lb. 12 oz.	187 lb. 8 oz.	145 lb. 11 oz.
5th week	142 lb. 2 oz.	177 lb. 0 oz.	166 lb. 0 oz.	186 lb. 14 oz.	145 lb. 12 oz.
6th week	145 lb. 0 oz.	177 lb. 0 oz.	169 lb. 10 oz.	186 lb. 3 oz.	146 lb. 1 oz.
Mean	142 lb. 15 oz.	176 lb. 13 oz.	167 lb. 13 oz.	186 lb. 14 oz.	145 lb. 13 oz.

SUMMARY AND CONCLUSIONS

A comparison of the data relative to physiologic response, gathered from a group of ten men during a period of three weeks during which they were eating a "basic breakfast," with those collected from the same men during a period of three weeks when breakfast was omitted, justifies the following conclusions:

The tremor magnitude of nine of the ten subjects was significantly greater when breakfast was omitted than when the "basic breakfast" was eaten. In one case there was no change. This is evidence that the omission of breakfast increases tremor magnitude.

Eight of the ten subjects showed a significant decrease in maximum work output during the "no breakfast" period as compared with the "basic breakfast" period. Two of the subjects did less work during the "no breakfast" period, but the differences were not highly significant. Thus it can be concluded that the omission of breakfast causes maximum work output to decrease.

Three of the ten subjects showed a significant increase in choice reaction time during the "no breakfast" period, two showed a significant decrease, and five showed no highly significant change. Where the omission of breakfast altered reaction time significantly, the majority of the subjects were slower during the "no breakfast" period.

There were no significant changes in body weight when the subjects changed from the "basic breakfast" to "no breakfast." Similarly, there was no significant change in body weight when the subjects changed from "no breakfast" to "basic breakfast."

The reactions of men to the omission of breakfast appeared to be more pronounced than is the case with women. This is suggested by the fact that they complained more about being hungry, and in addition, showed rather consistent fatigue reactions following bouts of strenuous exercise. The reactions which most experienced irregularly and two consistently were dizziness, nausea, and vomiting.

REFERENCE

(1) TUTTLE, W. W., WILSON, M., AND DAUM, K.: The effect of altered breakfast habits on physiologic response. J. Applied Physiol. 1: 545, 1949.

Possibilities for Improving Flavor and Stability of Frozen Milk

The Bureau of Dairy Industry reported last year that the addition of ascorbic acid to milk prior to freezing greatly defers but does not prevent the development of an oxidized flavor during frozen storage.

In further efforts to improve the stability of the frozen milk, the investigators this year tested other substances besides ascorbic acid, including glutathione, nordihydroguariaretic acid (N. D. G. A.) lecithin, and two forms of vitamin E (alpha and gamma tocopherol). All, particularly N. D. G. A., were effective to some extent—the fat-soluble substances being more effective when first dispersed in warm cream instead of milk. None was as satisfactory, however, as ascorbic acid, when this vitamin was added to milk at the rate of 100 mg. per liter.

The effect of various processing modifications was also investigated. The normal flavor of the frozen product was retained longer when the milk was separated and the skim milk and cream were pasteurized separately, and then mixed, homogenized, and cooled. Heating the skim milk and cream (particularly the cream) more than in conventional pasteurization, but not to the point of adversely affecting the flavor, increased the flavor stability of the frozen and reconstituted product.

In related experiments to increase the physical stability of milk held under frozen storage, milk was filtered through a synthetic organic resin cation exchanger to remove a portion of the calcium. It is known that calcium affects the heat stability of milk and, therefore, of the acid form and the alkaline form of the organic ion exchanger in proper proportions. The resultant filtrate had a normal pH (6.5), treatment with organic exchangers as is the case with the inorganic exchangers.

When milk was filtered by this method, at the rate recommended by the manufacturer of the resin, as much as 50 per cent of the calcium was removed and only an insignificant amount of phosphorus was added or subtracted. The reduction of ascorbic acid was small, a soft-curd milk was produced, and both the physical and flavor stability during frozen storage was increased. Little or no off-flavor was detected when as little as 15 to 20 per cent of the calcium was removed.

These investigations were conducted with funds made available through the Research and Marketing Act.—*From Report of the Chief of the Bureau of Dairy Industry, U. S. Department of Agriculture, 1949.*

Influence of Distribution of Meals on Appetite in the Sick

Appetite-Training[1]

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DAILY contact with patients over a number of years has led to the study of the physiologic mechanism concerned in the normal acquisition of food and its modification by disease. In the discussion which follows there will be presented: (a) a series of cases which illustrate the problems arising in feeding patients with severely depleted nutrition due to disease; (b) a plan instituted in 1945 for the correction of this anomaly; (c) a discussion of the mechanism for the normal acquisition of food and its disruption by disease; and (d) an analysis of the physiologic mechanism involved in this correction.

To combat anorexia encountered in cases of severe undernutrition, an experimental plan of "appetite-training" was instituted in 1945 in the Research and Educational Hospital and the Illinois Neuropsychiatric Institute of the University of Illinois. Of the cases presented, five were treated in the first hospital, one in the latter. The appetite-training regimen consisted of reducing the *number* of meals served to patients, but with no decrease in nutritive or caloric value. As the food intake approached or equalled the amount offered, the quantity was increased until weight gain was achieved.

PRE-EXPERIMENTAL PERIODS

Prior to instituting an appetite-training regimen with any patient, various types of dietary managements designed to encourage the patient to eat were used, with little or no result in terms of weight gain. In none of the patients studied were there physical or organic factors which prevented the ingestion of food or its progress through the alimentary tract. There were inhibitions, but these were the factors under study. Failure to maintain or gain weight when adequate quantities of food were offered was attributed to a failure of the appetite and to an absence of the hunger drive. This assumption was considered to be all the more valid if the patient later in the experimental period ate sufficient food to gain weight.

"Adequate quantities of food" must now be defined. Food requirements in hospitalized patients are increased by elevations of basal metabolism, fever (7 per cent for 1°F.), and activity. If there is no elevation in the basal metabolism, the following rules have proved satisfactory: For maintenance of body weight at ambulatory levels of activity and in the absence of fever, basal plus 30 per cent calories are sufficient. If fever is present, basal plus 50 per cent calories are required. For weight gain, basal plus 125 to 150 per cent are needed. The basal calories are estimated as those of a normal patient of the same age, size, and sex.

Diets. The following types of dietary management were used in the pre-experimental periods:

General Diet. This was served from food carts and supplemented with milk and other feedings at 3 and 8 P.M. As served, this diet contained approximately 2000 to 2300 calories and 60 gm. protein. It has been unusually well received as a rule.

Tube Feedings. These varied in composition. The carbohydrate was furnished by a form of dextrose, protein by hydrolysates, and fat by cream. The tube was passed through the nose into the jejunum when all the food was fed in this manner, and into the stomach when the feedings were used as supplements.

Quantitative Diets. These were weighed diets, usually high in protein. They were planned after conferences between the dietitian and the patient, with adjustments to make the diet approximate the patient's usual food habits. More commonly the food was served as three meals and an evening lunch. At other times, three interval feedings were served, making a total of six feedings a day. The distribution of the food between carbohydrate, protein, and fat was based on acceptability.

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 12, 1949.

EXPERIMENTAL PLAN

In three of the patients whose histories are reported here, the appetite-training program was started with only one meal a day served at 8 A.M. In two, the experimental regimen was begun with two meals a day at 8 A.M. and 4:30 P.M. In private hospitals in order to conform to hospital routine, meals are customarily served at 8 A.M. and 6 P.M., although patients agree that hunger becomes most pronounced around 3:30 or 4:00 o'clock and subsides somewhat by 6 o'clock. By serving the second meal at 4:30 P.M., it was possible to take advantage of a period of gastric tetany as described by Carlson (1).

When the program was well instituted, a third small feeding at 10 P.M. was used in making the transition to three meals a day.

On initiation of the appetite-training program, the doctor and the dietitian stressed to the patient the importance of eating all of the food served, but, more food is added only when the patient had eaten all food served. The total calories in the diet were increased as the quantity consumed increased. Additions were made to each meal as they were accepted until the food intake was sufficient to establish satisfactory weight gain. The character of the meals may have been changed from day to day, but replacements of uneaten food on the same day were not allowed.

PSYCHIATRIC ASSISTANCE

Psychiatric training is a part of the routine instruction of the medical clerks. Patients admitted to the medical service were used as subjects for this training, which was supervised by a professor from the Psychiatric Department who was in daily attendance. Thus recognition of psychic factors contributing to their illness was assured all medical patients.

CASE STUDIES

Cryptogenic Fever

Patient W. B., age 39, entered the hospital complaining of a weight loss of 53 lb., a daily temperature, and a productive cough. Physical examination revealed a large liver and spleen and a moderate increase in broncho-vascular markings. The findings were otherwise not significant, and his case was catalogued as "fever of unknown origin with splenomegaly and hepatomegaly." His clinical course was similar to that seen in patients with Hodgkin's disease.

In Table 1 the course of his illness is divided into five periods. During Period *A*, approximately 180 days, while he had been at home where he had the benefit of home cooking and the encouragement of a solicitous family, he had lost 53 lb. During Period *B* of his hospitalization, he was sick and on the whole inactive. His basal requirement was calculated to be 1700 calories. His temperature (maximal daily average of 100.4°F.) and activity, even though modified, would have increased his requirement to basal plus 40 per cent (2380 calories). Although this amount of food was served to him in his three meals and between-meal feedings and additional food and larger servings could have been obtained on request, he continued to lose weight. His problem was one of lack of appetite and food intake, not the inaccessibility of sufficient food.

Period *C* is defined as beginning on the first day his improvement was easily recognized. From this point, his days were good, he was more alert, and bouts of temperature and chills recurred irregularly. The same course proceeded during Period *D*. However, even though slow gradual recovery was expected to occur and weight loss to be less than in Period *C*, it was actually greater, indicating that the appetite and food intake were still inadequate to protect the body weight. During the 75 days of Periods *C* and *D*, there was a weight loss of 9.5 lb.

The patient was then placed on an appetite-training regimen which lasted for 56 days, during which he gained 13 lb., and his clinical state improved measurably. The weight increase and the quantities of carbohydrate, protein, and fat used in his diets in Period *E* are given in Table 2. In examining these figures, it must be remembered that his diet was not increased until he was able to eat all of the food previously allowed. In six days he was able to increase his food intake from 723 to 1856 calories in one meal a day. From this date until his discharge, he was able to eat in two meals a day almos

TABLE 1

Weight changes related to type of diet and clinical state of patient with cryptogenic fever

PERIOD	NUMBER OF DAYS	TYPE OF DIET	WEIGHT CHANGES		CLINICAL STATE	
			Total	Daily	Average daily maximal temperature	Days maximal temperature exceeded 100°
			lb.	*lb.*	*degrees*	*%*
A (at home)	180	home selection	−53.0	0.294	unknown	unknown
B (hospitalized)	123	general	−12.0	0.095	100.0	46
C (hospitalized)	31	general	−3.0	0.097	99.6	29
D (hospitalized)	44	general	−6.5	0.125	99.5	24
E (hospitalized)	56	appetite-training	13.0	0.232	98.8	4

TABLE 2

Food intake of patient with cryptogenic fever during appetite-training regimen

DATE	WEIGHT	DIET SERVED			
		Carbohydrate	Protein	Fat	Calories
One Meal a Day					
	lb.	*gm.*	*gm.*	*gm.*	
10/4	150.0	97	41	19	723
10/5		141	56	24	1004
10/6		152	72	48	1328
10/10		180	80	66	1630
10/13		180	86	88	1856
Two Meals a Day					
10/14		223	105	115	2347
10/19		274	132	120	2704
10/20		296	154	125	2925
10/24		335	160	145	3285
11/30	163.5	335	160	145	3285

twice the amount of food taken at one meal. The results paralleled quite closely those described by Brobeck (2, 3) in his rat training program. This patient's improvement, in the opinion of two of the attending staff, was due to the increased food intake, and they even raised the question as to whether his hospitalization might have been shortened by an earlier use of the appetite-training program.

There was no psychological resistance by this patient to recovery. He was ready to accept any and all methods of treatment, and it was in this spirit of cooperation that he had accepted the appetite-training.

Edentulous Patient with Toxic Nodular Goiter

Patient G. F., a 59-year-old housewife, entered the hospital complaining of a loss of 100 lb. and loss of appetite over the preceding eight months. All of her teeth had been removed two years before, and she had discarded the upper denture eight months previously because it was painful. No lower denture had been obtained. It was finally decided that her weight loss was due to a mildly toxic goiter and the additional factor of reduced food intake due to the absence of teeth. The progress made in restoring her weight is shown in Table 3.

She entered the surgical service and was at once placed on a soft, low-residue diet containing 2741 calories (basal plus 119 per cent). This was planned to meet her anticipated increase in metabolic rate and to insure her eating in the absence of teeth. In twenty-two days, she had gained 2.5 lb. The diet was served quantitatively from the diet kitchen, but there was no record made of food intake.

She was discharged from the hospital and referred to the medical dispensary, but re-entered the hospital

TABLE 3

Weight changes related to type of diet of edentulous patient with toxic nodular goiter

DATE	TYPE OF HOSPITAL SERVICE	WEIGHT	FOOD INTAKE				
			Carbohydrate	Protein	Fat	Calories	
						Served	Eaten
Soft, Low-Residue Diet							
		lb.	*gm.*	*gm.*	*gm.*		
7/25	Surgical	104.5	284	102	133	2741	no record
8/16*		107.0					
Quantitative Diet†							
8/25	Medical	113.0	315	112	87	2491	no record
One Meal a Day							
8/31	Medical	106.0	102	91	113	1790	1021
9/1						1790	1102
9/2						1890	1132
9/3						1990	1355
9/4		104.5				1990	1990
Two Meals a Day							
9/5	Medical	104.5	181	81	112	2200	2200
9/6						2300	2300
9/7		111.0				2400	2400
9/10		116.0				2700	2700
9/12		118.0				2900	2900
Three Meals a Day							
9/13	Medical	118.0	243.5	105	177.8	3000	3000
9/22		123.5				3300	3300
10/9		130.0				3460	3460
Two Meals a Day							
10/10	Medical	130.0	269.5	112.5	219.7	3520	3500
10/30		138.5	296.0	173.0	217.0	3529	3500

* On this day the patient was discharged from the hospital and referred to the medical dispensary. She remained at home, on a self-selective diet for a little over a week.

† Soft in character.

a week later, weighing 113 lb., a gain of 6.0 lb. Some of this gain may have been due to water retention, since during the first week of re-hospitalization, she lost 7 lb. while receiving 2491 calories. Her basal requirement was calculated to be 1250 calories. Thus she was being served basal plus 100 per cent calories which should have maintained her weight, even in the presence of some increase in her metabolic rate. If she was not losing water, then she was not eating all of her food.

After six days, she was placed on a one-meal-a-day appetite-training program, but continued to lose weight. This would be expected since she was eating inadequate quantities of food. Five days later, when she was able to eat more food, she was given two

meals a day with more than 2200 calories. A gain in weight then began. After she had been on the appetite-training program for thirteen days, her weight had increased 12 lb.

At this time she was fitted with new dentures and placed on three meals a day. This regimen was continued for twenty-six days, with calories ranging up to 3460, she gained another 12 lb.

To test her ability to maintain and continue a weight gain on two meals with the same quantity of food, she was returned to two meals a day and over the next twenty days gained 8.5 lb., an average of 0.42 lb. daily as compared to 0.46 lb. per day on the three-meal regimen.

There were no psychogenic factors blocking the eating of food with this patient. There was the physical handicap of the loss of her teeth and the physical deterioration due to an inadequate diet, which was accelerated by the slight increase in her basal metabolism.

Reactive Depression and Anorexia Nervosa

Patient W. C. was a 47-year-old office worker who came to the psychiatry out-patient dispensary because of severe mental depression, anorexia, and weight loss. The patient presented a picture of severe emaciation without edema. He seemed emotionless and indifferent to his surroundings. Questions were answered haltingly and personality changes were evident. Because of a cardiac fibrillation and a nodular goiter, it was necessary to determine whether the weight loss might be due to hyperthyroidism. It was decided, however, that hyperthyroidism did not exist and that the weight loss was caused by inadequate food intake, due in large part to his emotional ill health.

For thirty years, all of this man's earnings had gone to pay off the mortgage on the bungalow shared by him and his mother. At her death three years before, her will left the bungalow to another brother. The patient had married shortly thereafter, only to become plagued with bouts of anorexia and vomiting which lasted as long as eight days. This condition had grown progressively worse during the preceding eighteen months.

On hospitalization, he was put on the general diet (2000 to 2200 calories) with three meals a day and supplements at 3 and 8 P.M. Four days later his calories were reduced to 1504 (carbohydrate 151 gm., protein 18 gm., fat 64 gm.), slightly more than his basal requirement (1410 calories). It was anticipated that reducing the food would induce hunger, but poor eating and vomiting continued. Two weeks later his calories were increased to 3155 (carbohydrate 278 gm., protein 189 gm., fat 143 gm.), and although he ate more, he still vomited occasionally and omitted meals at other times. It was estimated that on his good days he ate approximately 2500 calories.

A month after admission, his appetite-training began with two meals a day with total calories 3052 (carbohydrate 252 gm., protein 101 gm., fat 182 gm.). Breakfast provided approximately 1450 calories and the evening meal 1600 calories. On this regimen only an occasional episode of vomiting occurred. His progress is recorded in Chart 1 by the weight gain. This program was continued until his release a little more than six weeks later. During this time, he had six interviews with the resident in psychiatry, who felt that the patient had a reactive depression but no suicidal tendencies and thus could be allowed to remain on the medical service. As he improved, he began to take an interest in occupational therapy and gradually established friendly contact with the other patients in the room.

The block to health in this patient was purely psychological, with only the secondary organic disease of malnutrition. His recovery may be attributed to restoration of his nutrition by the appetite-training, to the direction of his interest to his surroundings by association with psychologically normal individuals, and to the accomplishment of simple manual tasks under the direction of occupational therapy.

Hyperthyroidism with Manic Psychosis

Patient A. D., 32 years old, had not adjusted herself satisfactorily to married life. She continued to live with her sister during ten years of marriage. For part of that time her husband was in the Army overseas. On his return, she became disturbed and excitable, but these symptoms had been controlled by a thyroidectomy. Shortly afterward she was divorced by her husband, which further disturbed her because of religious beliefs.

She had worked until two weeks prior to her admission to the psychiatric hospital. On entrance, the psychiatric examination revealed manic behavior with hyperactive flight of ideas and circumstantiality of expression. The patient was oriented, and there were no hallucinations or delusions. It seemed reasonably certain that she had a recurrence of her hyperthyroidism, but it was not clear whether correcting this condition would also correct her mental

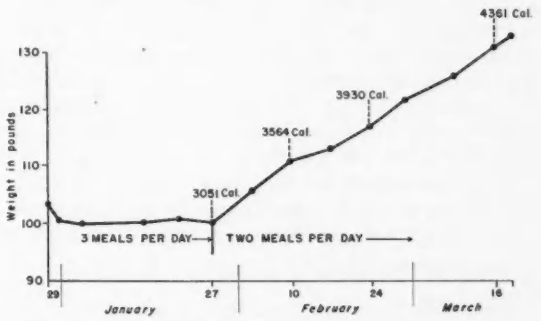

CHART 1. *Effect of appetite-training regimen on weight of patient with reactive depression with anorexia nervosa.*

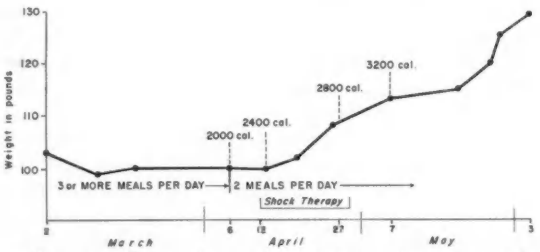

CHART 2. *Effect of appetite-training regimen on weight of patient with manic psychosis and hyperthyroidism.*

state. Her record is shown in Chart 2. She was placed on propyl thiouracil for her hyperthyroidism, and this was continued until she was ready for operation. Despite the hyperthyroidism, shock treatments became necessary to control her mentally. Fortunately the medication had reduced her basal metabolic rate sufficiently to make this safe.

On admission, the patient was placed on a high caloric diet (approximately 2600 calories) on which she was continued for six days when this was changed to a 3200-calorie diet (basal plus 150 per cent). Although this quantity of food was served, the dietitian reported that little was eaten. At first the patient's meals were served in her room, but after thirteen days she was allowed to eat in the dining room, an indication of some clinical improvement.

A month after admission, the appetite-training program was initiated, with 800 calories for breakfast and 1200 for the evening meal. For the first five days she ate poorly, the sixth day being the first in which she ate all of her food. Two days later she was eating 2400 calories, which represented basal plus 87.6 per cent. One could not expect a weight gain on fewer calories. After fifteen days on this regimen, her record read: "Ate a double portion of the calculated diet with great haste, and it satisfied her hunger." This notation suggests strongly the behavior of the animals with hypothalamic lesions in "attacking" their food (2, 3). A gain in weight began on the nineteenth day, four days before the last shock treatment, and continued progressively after she began to eat 2800 calories two days later.

One would conclude that this patient's hyperthyroidism with its exaggerated metabolic turnover had fanned her unstable psychologic organization into a manic episode. Due to the increased requirement for food and the adverse effect of the manic episode on the appetite, she was in a state of nutritional failure. With the correction of these two factors, there was an opportunity for appetite-training to become effective in restoring her nutrition.

Non-Tropical Sprue with Psychoneurotic Factors

Patient H. P., 34 years old, had first been admitted to the hospital six years before, at which time a diagnosis of steatorrhea due to non-tropical sprue was made. Over a period of two years she had lost 40 lb. Her improvement had been progressive with treatment by blood transfusions; a low-fat, high-protein diet; intramuscular injections of liver extract and oral administration of calcium gluconate, aluminum hydroxide, and pancreatin. When discharged, she had gained 17.5 lb. and her bowel movement had been relatively normal.

After leaving the hospital, she had married and had had two pregnancies. The diarrhea had been aggravated by the pregnancies and by emotional crises which developed with her mother-in-law. The first child was born prematurely and lived only 12 hr. Diarrhea recurred after the second child had been born two years later.

She was admitted to the hospital the second time in July, 1947. Earlier in the year she had been hospitalized twice in other hospitals, where she had remained only a short time and left without improvement.

A definite mental change had occurred in the patient since her original admission, and all attempts at feeding were unsuccessful. Quantitative diets were ordered twice, in which the protein was elevated and fat depressed. During this period she also received intravenous hydrolysates and blood transfusions. The resident noted that there was great resistance to food by the patient with repeated and multiple complaints. The dietitian was then instructed to give the patient any food she wished, since it was felt that anorexia was a strong component of the patient's picture. But this regimen also ran into multiple resistance in that at each meal the patient would have some new and different complaint. Her weight dropped from 91 to 78 lb. in two months.

After unsuccessful tube feeding, the appetite-training program was instituted. During this time the patient's appetite improved tremendously and she was able to eat all of each of the two meals. There seemed to be a lessening of her personal discrimination against foods (Table 4). After three weeks, the patient was allowed to have three meals a day, 800 calories each, but there seemed to be a recurrence of the anorexia and increased resistance to food and increased complaints about particular foods. These complaints were not all uniform and shifted from day to day.

The weight gain during appetite-training was not striking, but this is understandable since she was doubtless substituting fat and flesh for water (hidden edema of undernutrition). In the meantime she had been allowed to go home on passes from the hospital. In these visits she was faced again with a nagging mother-in-law and the responsibilities of her child and home. She gradually became dissatisfied and uncooperative and was discharged at her own request.

The patient's chronic illness required rigorous and meticulous dietary control. She became psychologically exhausted battling with this regimen, her mother

TABLE 4

Weight changes related to type of diet of patient with non-tropical sprue and anorexia nervosa

DATE	WEIGHT	DIET SERVED				CLINICAL STATE
		Carbohydrate	Protein	Fat	Calories	
Three Meals a Day						
	lb.	*gm.*	*gm.*	*gm.*		
7/22	91					Diarrhea
7/24		434	169	62	2970	Vomiting
9/12*		85	188	86	1866	Complaining, uncooperative
Two Meals a Day						
10/10	78	140.2	129.1	59.1	1600	Ate all food served
10/11					1600	Ate all food served
10/12					1600	Ate all food served
10/13					1600	Appetite good
10/14					1600	Stronger, ate all food served
10/16		172.7	135.1	65.1	1800	—
10/18		206.0	143.0	66.0	1996	Ravenously hungry
10/24		243.0	153.0	85.0	2350	Much improved; occupational therapy started
10/27	82				2350	—
Three Meals a Day						
11/4		288	172	93	2677	Going home on passes; returning uncooperative; vomiting
11/6	76					Discharged at her own request

* This regimen was continued until October 9, when tube feeding was tried but abandoned due to rapid pulse and the poor condition of the patient. The following day appetite-training was begun.

in-law, and other home problems. When she remained in the hospital she gained weight on the two-meal regimen. Then she returned home physically well, but with the necessity of meeting her problems, and of abandoning the subconscious satisfaction derived from her illness over a period of six years. These were sacrifices she was unwilling to make. It is interesting that the appetite-training worked successfully until it was pitted against the stronger motive of secondary gain from a long-standing illness.

Metabolic Bankruptcy with Anorexia Nervosa and an Unresolved Conflict

Patient D. E., age 21, entered the hospital weighing 53 lb., which represented a loss of 80 lb. She stated that she had been unable to retain food, but had taken vitamin pills daily. Her weight loss had been gradual over a period of two to three years. She was extremely emaciated but not edematous. The physical examination was not otherwise remarkable except for her asthenia. Laboratory studies showed a relatively severe anemia with a hemoconcentration, adrenal and kidney deficiencies, and low basal metabolic rate.

TABLE 5

Weight changes and dietary management of patient with metabolic bankruptcy and anorexia nervosa prior to appetite-training

DATE	WEIGHT	TYPE OF FEEDING
	lb.	
5/4	53	General diet*
5/10	58	General diet plus interval feedings
5/21	59	Tube feeding†
5/29	61	General diet plus interval feedings
6/15	59	Tube feeding
6/19	62	General diet
7/4	56	Tube feeding
7/17	63	General diet
7/27	71	Quantitative diet‡—1800 calories
8/7	69	Tube feeding
8/20	76	Quantitative diet—2500 calories
10/15	81	Tube feeding
10/17	85	Quantitative diet—2800 calories

* Same type and quantities served to all patients from food carts.

† 100 gm. carbohydrate (dexin), 56 gm. protein (Amigen), 67 gm. fat (cream) = 1227 calories.

‡ A weighed diet served from therapeutic diet kitchen after interviews by the dietitian with the patient.

When her nutrition was subsequently restored with food and without the use of any hormone therapy, all evidence of kidney, adrenal, and thyroid deficiency disappeared. In retrospect she was considered to be suffering from pituitary deficiency induced by undernutrition. There is abundant evidence to indicate that starvation in animals (4, 5) causes degenerative changes in the pituitary gland.

In Table 5, the gradual progress in the restoration of the patient's nutrition until appetite-training was begun is summarized. The appetite-training program is summarized in Table 6. The various feeding plans used prior to appetite-training were: (a) eating food as served to other patients; (b) forced feeding for all nourishment in one period (tube feeding) and on other occasions part nourishment by this method; (c) offering three meals daily with interval feedings; (d) catering to her special likes and dislikes; and (e) indoctrination to the need of eating. Despite some weight gain, the feeding problem was not solved.

Following these efforts she was placed on an appetite-training program, during which care was taken to serve such foods and in such quantities as she would accept. Emphasis was placed on eating all the food and on increasing it only when her appetite demanded more. During the twenty days she was on this program, she gained only $3\frac{1}{2}$ lb. However, at the close of the period she was eating all of her

TABLE 6

Appetite training in patient with metabolic bankruptcy and anorexia nervosa

DATE	WEIGHT	DIET SERVED				DIETITIAN'S REMARKS
		Carbohydrate	Protein	Fat	Calories	
One Meal a Day						
	lb.	*gm.*	*gm.*	*gm.*		
11/10	86½	113	28	43	951	Eaten
11/11		91*	14*	31*	699*	Eaten; wishes an evening meal
Two Meals a Day						
11/12		198	58	91	1843	Supper added
11/13		198	58	91	1843	Both meals eaten
11/15		211	60	99	1975	Will accept more food
11/20		226	70	105	2129	—
11/23	90	250	87	133	2545	Additional food accepted

* Approximately.

food which contained basal calories plus 150 per cent. From the dietitian's remarks, it was noted that the patient was cooperating in the acceptance of additional food.

The causative factors of this patient's illness were uncovered gradually. Briefly, her story ran as follows. Out of twelve siblings, she was the only girl and the only child remaining at home. Her mother was an extremely capable person whom the patient admired. Her father had been a drunkard who had often beat her during his bouts of drinking and who had finally deserted the family. She helped support her mother by working as a scrub maid. After work she helped with the household chores. No significant financial help was received from the other children. She had no social life or "boy" friends. She was an ugly duckling, consigned to a life of drudgery. She often dreamed of completing her education and becoming a lawyer, but she was unable to find a solution for the conflict between the necessity of helping her mother and fulfilling her dreams. The mental conflict and the dilemma which confronted her inhibited completely the mechanism for the acquisition of food and allowed the one for its rejection to become prepotent.

During the first two and a half months of her hospitalization, her contention that she was sick was accepted and exhaustive clinical studies were made to establish a diagnosis. This period was characterized by kindliness and persuasion by the nurses and dietitians with the hope that she would eat. When this appeal failed, the use of the stomach tube convinced her that the staff regarded food as important as medicine and would not be deterred from its administration, even though the process was distasteful and distressing.

Psychoanalytic treatment was started two months after her admission, but a three-month trial analysis indicated that such treatment should be discontinued because it seemed improbable that the patient would ever be capable of any real insight into her problems. The analyst attributed the failure to her mental immaturity and her poor physical condition and recommended that she enter the psychiatric ward for a prolonged period.

Factors which are not specifically designed as forms of psychotherapy but which function unobtrusively in this manner may be classified as ancillary psychotherapeutics. Such factors which operated with this patient were: (a) association daily with many persons who were mentally normal despite their physical illnesses; (b) restoration of her nutrition to the point where she was no longer plagued by pains, bodily fatigue, and exhaustion; (c) learning to sew and knit and forget herself during daily visits to occupational therapy; and (d) entrusting her with the responsibility of testing the urines of diabetic patients.

On a day when she looked unusually forlorn and discouraged, a nurse took her to a beauty parlor. After a manicure, a facial, and a coiffure, she returned a different girl. She had decided that she would be willing to forego a college education to take training as a beautician. From the appetite-training program she had recovered her ability to eat, and it was thus understandable that shortly afterward she requested her release. She returned home and entered training to become a beautician. Replies to follow-up letters have indicated that she has made good progress.

DISCUSSION AND SUMMARY

In the acquisition of food, the stomach, thalamus, hypothalamus, and cortex may have an interrelated role. An attempt has been made to clarify these relationships in Chart 3.

Normally, hunger stimuli originate from gastric contractions and are transmitted by the vagus to the medulla and by a primary projection to the thalamus. The stimuli arising from the contact of the taste buds with food induce affective states in the thalamus. If the state is pleasant and receptive, then the effector mechanism for the ingestion of food is stimulated, and the food is eaten. If the state is unpleasant and rejective, then the defensive mechanism is stimulated and the food is not eaten. In a similar manner, affective thalamic states may be induced by stimuli which originate in the cerebrum or by stimuli which are transmitted through it from the olfactory cells.

We are now in a position to define the hunger drive as used in this discussion. It is due to the operation of reflex circuits designed for the acquisition of food with primary projections to the thalamus which are uninhibited by secondary cortical circuits.

The mechanism for the rejection of food has, in general, the same afferent fields as that for its acquisition. In the gastrointestinal tract, stimulation of the oopharynx and duodenum (6) most easily induces vomiting and retching. The protective value of these trigger areas is obvious. The former guards the gastrointestinal tract from invasion by noxious agents. The latter confines the noxious agents to the relatively non-absorptive stomach until they can be ejected.

The Healthy and the Sick Individual

Mechanisms which are physiologically prepotent dominate the organism's behavior. As they lose their potency, they are supplanted by others which are often antagonistic. Dominance is dynamic rather than static. The acquisition of food is usually associated with normal health. As the drive for food lessens, the physiologic mechanism loses its dominance and it is replaced by a mechanism for the rejection of food. This condition may exist for a time in apparently healthy individuals, but if it persists the individual becomes sick. The cause of his illness is then found in an adequate food intake.

Conversely, one is accustomed to think of sick persons as those who have lost their drive for food and in whom the mechanism for its rejection has become prepotent. This condition may exist, but it is not obligatory. It may be replaced by the drive for food and recovery begins.

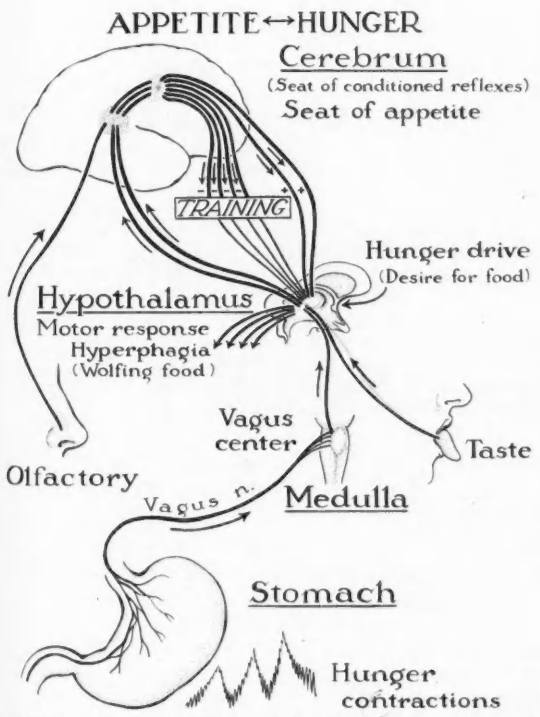

CHART 3. *Relationships of the stomach, hypothalamus, and cortex in the acquisition of food.*

From a study of the clinical records presented, it would appear that correction of the anomaly induced by disease in the mechanism for the acquistion of food would depend on making this mechanism prepotent. Practically, this is accomplished by serving the patient such food as he will eat in one or two meals a day. Food is withheld in the intervals. When the quantities served are eaten completely, the food is increased until weight gain is established. Theoretically, this plan accomplishes its objective by the release of the hypothalamic hunger drive from cerebral inhibition, or by augmentation of the hunger drive through stimuli arising from afferent fields.

Brobeck *et al.* (2, 3) found that it was possible to make normal rats hyperphagic by training. They ate their food avidly and consumed larger than normal quantities. Weight gains comparable to those attained by the rats with hypothalamic lesions were recorded. The day's ration of food was placed in the cage of the rat undergoing training. He was allotted 1 to 2 hr. for feeding. At the end of this time the food was removed, and no further feedings were given for 24 hr. When the animal became conditioned to eat his ration within the allotted time, a second one was given later in the day. This ration in turn was devoured. The metabolic studies on these rats gave results similar to those observed in rats with hypothalamic lesions. This confirmed the conclusion that weight gain in the operated animals was due to hyperphagia and pointed to a method by which it could be attained in the normal rat.

The application of this principle to the behavior of the rat can be readily visualized. Normally the rat in his wild habitat hoards his food and eats it at night in safety. He makes forays during the day for gathering food, but he does not expose himself by eating it in unprotected spots. In captivity, this reflex organization persists, and he continues to eat at night. When, during a training program, he is faced with the necessity of eating food at once or losing it, he blocks the inhibitory cerebral reflexes (Chart 3) which were organized as a protection to his life and eats at once. With subsequent repetitions of the removal of food from the cage, this blocking occurs more easily and then immediate eating becomes normal behavior.

While the cerebral cortex in human subjects theoretically can enhance or inhibit the hypothalamic hunger drive, it probably more frequently inhibits it. The concept of food has been extended by cortical conditioning to include many intangible, temporally related activities. Thus, if the child is denied fondling and loving during nursing, the cortex blocks the hypothalamic hunger drive and the child nurses poorly or not at all. As the drive loses its potency,

it is replaced by regurgitation and vomiting. As the relatively normal older human subject becomes torn and distraught by conflicting cerebral antagonisms, these block the hunger drive, and loss of appetite gradually fades into anorexia and later into active vomiting. When this maladjustment continues, due to the patient's inability to resolve his conflict, the picture of anorexia nervosa unfolds. For this reason, a permanent cure for anorexia nervosa never occurs until the conflict is resolved. The history of a young women, whose case is not described due to lack of space, showed that she recovered from four episodes of extreme emaciation before final cure. She understood her problem all the time, but did not have the power to implement an earlier solution.

The hunger drive can also be augmented through stimuli arising from the afferent fields. Thus, the intensification of the hunger around 3 P.M. strongly suggests that the participation of the gastric hunger contractions are important factors in inducing the patient to eat. With the ingestion of food, the intestines are filled and normal gastrointestinal peristalsis is re-established. This blocks off many inhibitory stimuli which might arise and depress the hunger drive. It also relieves the patient of many symptoms of gastrointestinal distress which he classifies under the all-inclusive term of "gas." When the bowel movement becomes normal, he has tangible evidence of his progress.

There is another group of patients who respond readily to the appetite-training program. They have no serious mental conflicts, but live in a state of constant anxiety and readily develop an attitude of frustration. Once food is withheld and hunger appears, they are willing to discard the fears of serious illness and return to normal eating habits.

The ingestion of large quantities of food in a short time does not appear to affect the appetite adversely. This mechanism is not entirely clear. Stetten and Boxer (7), by isotope studies, have shown that in the normal rat, 3 per cent of the food carbohydrate is stored as glycogen and 30 per cent as fatty acids. In the hyperphagic rat or individual, an even larger proportion of ingested carbohydrate is converted to fatty acids. Overeating replenishes the glycogen stores and increases the fat deposits. Fat is deposited rapidly and is immediately removed from the metabolic pool. For all intents and purposes, it remains outside of the body although it is accumulating in the depots, and for this reason it ceases to exert any influence on subsequent food ingestion.

In obesity, the induction of weight loss is often a desirable therapeutic measure. It can be seen that if the reasoning which has been applied to the mechanism of weight gain is applied to weight loss, then obese patients should be fed frequently throughout the day, providing the total calories are kept below their requirements. Space is not available to present evidence on the applicability of this principle to weight reduction.

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Why Plate Waste?

In his March 3 letter to state school lunch agencies, Oscar F. Beyer, Production and Marketing Administration, U. S. Department of Agriculture, Chicago, posed eleven questions concerning the reasons for plate waste. Since the answers are pertinent to any food production operation, we are reprinting them below.

1. Were products of good quality used to prepare the dish?
2. Was a standardized, tested recipe used?
3. Were all ingredients measured or weighed accurately?
4. Were directions followed carefully in preparing the food?
5. Was it cooked at the proper temperature?
6. Did the food taste good?
7. Did the food look attractive and appetizing on the plate?
8. Was the serving too large?
9. Was the food served at the proper temperature?
10. Was the food new to the children?
11. Had the food been served so often the children were tired of it?

Mr. Beyer also points out that a check on plate waste and the reasons for it will help in future menu planning and will mean future savings in food costs.

Problems in the Prevention of Rheumatic Fever by a Reinforced Diet[1]

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In rheumatic fever research all of us have two ultimate goals, specific treatment and prevention. I am optimistic and believe that knowledge gained in solving either of these problems may be applicable to the other. At this time, it appears that the goal of treatment may be a little closer than that of prevention. But it would seem reasonable to assume that before thoroughly satisfactory methods for therapy and prophylaxis can be expected, we must first determine what rheumatic fever is. For this reason our laboratories are concentrating their attention on the mechanism of rheumatic diseases.

In attempting to define a disease mechanism one must have a safe point of departure. To this end we have studied the rheumatic patient over a period of fifteen years and concentrated our thinking on the disease as it occurs in man. When one studies a large number of rheumatic patients, he finds that each is unique in his clinical responses, and in fact each attack within the same person is unique. Fortunately, however, there are certain common denominators that appear in at least 90 per cent of instances. These common denominators are bacteriological, serological, clinical, and histologic. These are all biologic phenomena. Little is known of chemical changes in rheumatic fever. However, the chemical lesion of rheumatic fever, when finally defined, will in my opinion be present with the same regularity that disturbed carbohydrate metabolism occurs in diabetes mellitus.

THE RHEUMATIC SYNDROME

Before we look at one of our goals, prophylaxis, I wish to summarize briefly certain observations which we believe form a reasonable working hypothesis. Rheumatic fever is not a systemic infection, like typhoid fever or malaria, but represents a biochemical reaction of the host to infection. This reaction indicates a defect in metabolism. However, this derangement in metabolism comes only at the end of a chain of reactions which require from one to three weeks for maturation. The beginning of the chain is a biologic accident, an upper respiratory tract infection caused by Group A hemolytic streptococcus. This is followed by immunologic changes, such as are observed in sensitization to horse serum. At this time, approximately two weeks after recovery from streptococcal infection, the normal human host goes through a crisis. This can be recognized by a temporary diapedesis of red blood cells through the capillaries of the kidney glomeruli. Coincident with this crisis, the unusual person, a rheumatic subject, develops the syndrome of rheumatic fever. Whereas hemolytic streptococcus precipitates a reaction in most persons, the differential which determines whether the reaction reaches the intensity of rheumatic fever is associated with the "host chemistry" of the person infected.

The rheumatic syndrome is manifested by clinical phenomena which closely resemble serum sickness. Furthermore, if death occurs within a few days, the histologic findings also closely resemble those found in patients who die of serum sickness. Striking changes occur in small blood vessels characterized by dilation of capillaries and the escape of blood elements into tissues. This reaction is believed to be due to chemical changes occurring in the cement substance of the vascular tree and the ground substance of connective tissues. These substances are classified as "mucoproteins." Later, and especially if the attack is polycyclic, other tissues are involved. To date we have confined our thinking to the early chain of events, two unknowns of which have attracted our interest. These unknowns are: (a) why do certain persons react violently during this post-streptococcal crisis and develop a rheumatic attack, and (b) what is the substance released at this critical point which induces widespread chemical changes in mesodermal tissues? When the answers to these two questions are known, we shall probably be able to define the mechanism of rheumatic disease. Whatever this mechanism is, it can be modified—that is, intensified

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 12, 1949.

by certain chemical agents and diminished by others. Among the latter appears to be diet.

DISSEMINATED LUPUS ERYTHEMATOSUS—A RELATED DISEASE

But before describing the circumstantial evidence which would indicate that some dietary factor or factors may be favorable to the rheumatic host during a post-streptococcal crisis I wish to digress briefly and point out certain characteristics of a related disease. This disease, disseminated lupus erythematosus, is characterized by connective tissue changes comparable to those observed in rheumatic diseases. It is also accompanied by a number of metabolic changes which are even more striking than those observed in rheumatic fever. I wish to discuss this disease because its disturbances in metabolism pose interesting and important problems in the interrelations of nutritional deficiencies, increased globulin production, and histologic changes in endocrine glands.

Clinical Characteristics

The initiating factor in disseminated lupus erythematosus is unknown. The clinical characteristics and certain anatomical lesions are similar to and may even be indistinguishable from those of rheumatic fever. However, the most interesting findings are the disturbances in metabolism. The disease occurs mostly in the female, and its later stages may resemble Simmonds' disease, a deficiency of the pituitary gland. The lupus process, although characterized by remissions and relapses, proved fatal in all but two of our thirty patients observed during the fifteen years prior to World War II. Its peculiar clinical characteristics were:

(a) Photosensitivity. Lupus patients develop severe recrudescences and even fatal hemorrhages following mild exposure to sunlight.

(b) Alterations of serous membranes. Lupus patients develop sudden, massive transudations of fluid into the pericardial, pleural, and abdominal cavities.

(c) Widespread changes in capillary permeability. Lupus patients develop petechial hemorrhages and even purpura in cutaneous tissues and mucous membranes.

(d) Hematopoietic disturbances. Lupus patients develop a severe secondary anemia, leukopenia, lymph node and splenic enlargement. In our only patient on whom white blood counts were made twice daily, it was found that the leukopenia became aggravated at the onset of each menstruation.

Histologic Changes

The peculiar histologic changes observed in thirteen of these patients at autopsy will be of special interest to those doing experimental work:

(a) Vascular tissues. There were focal necroses in the walls of small blood vessels, "wire loop" lesions in glomerular tufts of the kidneys, and exudation of coagulable material into the subendothelial tissue of arterioles.

(b) Serous membranes. There was thickening without signs of inflammation.

(c) Organs concerned with the formation and destruction of blood cells. There was bone marrow aplasia, splenic scarring in Malpighian bodies, lymph node necroses with nuclear fragmentation, and liver necroses with deposition of excess fat.

(d) Endocrine glands. There was cortical adrenal fibrosis and lipid depletion, pituitary focal necroses, testis atrophy, and absence of spermatogenesis.

As noted above, the most striking changes observed in these patients during life were metabolic. All had a marked hyperglobulinemia, especially in the euglobulin (gamma globulin) fraction. All had a marked depletion of ascorbic acid, which even in afebrile periods could not be corrected with massive doses of ascorbic acid administered both orally and parenterally. Blood calcium levels were low. Blood pantothenic acid levels were markedly elevated. None of these abnormalities was subject to correction by diet.

Effect of the Hormone Treatment

However, the lupus process in two of these patients, young housewives, appeared to be modified by parenteral administration of a hormone (1). These two persons in their early twenties had for more than one year experienced many manifestations of the lupus syndrome and become progressively worse. Menopausal symptoms accompanied by amenorrhea were severe. It was suggested that anterior pituitary hormones be tested on these patients. However, since potent preparations were not commercially available and since it was believed that estrogen (which was commerically available) stimulated anterior pituitary activity (2), it was recommended that Progynon-B and stilbestrol be administered[2]. Administration of this hormone to these two young women was followed by prompt relief of the menopausal symptoms and progressive recovery with gradual disappearance of all lupus manifestations except some elevation of the serum globulins. Whether these changes were mediated through the anterior pituitary gland, through the adrenal gland, through both, or through other channels remained unknown.

I have digressed in introducing the lupus syndrome for several reasons. First, this disease syndrome involves the same tissues that are the sites of rheumatic reactions and has a clinical resemblance to rheumatic fever. Second, this syndrome presents a metabolic problem in which there appear intense nutritional disturbances, changes in the hematopoietic system, changes in the serous membranes

[2] The author is indebted for advice to Professors Phillip E. Smith, Earl T. Engle, and Aura E. Sevringhaus.

and small blood vessels, changes in serum constituents, and changes in several glands of internal secretion. It was not possible to determine the sequential relation of these changes. However, it was possible to show that most of these abnormalities could be reversed and the reversal maintained by the administration of estrogen in the two patients under observation[3].

ROLE OF HORMONES IN CELLULAR METABOLISM

The role that estrogen and other hormones play in controlling cellular metabolism has been investigated by many laboratories in recent years. As evidence accumulates, it becomes more apparent that the pituitary gland, which has been compared to the "conductor of a symphony orchestra" may determine the diet and the "meal time" of many types of cells. However, the "conductor" must also eat to live. What determines his economy? This, so far as I know, has not been discovered. Perhaps it will prove to be his "boss," the hypothalamus.

We do, however, have fragments of knowledge indicating that certain vitamins are essential to both the catabolism and anabolism of hormones. The occurrence of excess estrogen is associated with failure of the liver to inactivate estrogen during B-complex deficiency (3). In certain animals, a lack of vitamin E modifies reproduction (4). A lack of thiamine modifies the thyroid activity (5).

Undernutrition, and especially a deficiency in the intake of ascorbic acid or of B-complex, may cause pronounced enlargement of the adrenal cortex (6). Imbalances in diet are also known to cause the development of adrenal cortical enlargement during the general-adaptation-syndrome. The ascorbic acid content of the adrenal cortex partly depends upon the dietary intake of this vitamin. It is noteworthy that in the guinea pig, which is particularly sensitive to ascorbic acid deficiency, avitaminosis C, elicits not only an almost complete loss of adrenal ascorbic acid but also severe degenerative and hemorrhagic lesions in the adrenals (7). Since cortical activity of the adrenals is under the control of the anterior pituitary it seems to me that a key problem for students of nutrition is: What are the requirements of the pituitary gland essential for its maintenance of normal activity during periods of crisis?

THE HOST RESPONSE IN RHEUMATIC FEVER

Returning now to the rheumatic subject, his problem, in my opinion, is comparable to that of the lupus subject in certain respects but quite different in others. These differences may be due in part to the fact that rheumatic fever is commonly diagnosed at the onset of an attack and its evolution may be observed even prior to an attack. Irrespective of this, it now seems well established that the rheumatic reaction can be modified by chemical agents, either inhibited or intensified. As would be expected, activation of the rheumatic process can be prevented by the administration of prophylactic doses of sulfonamides or antibiotics, precluding streptococcal infections of the upper respiratory tract. This fact, however, is really not pertinent to our problem in "host chemistry." However, two observations that seem pertinent are: salicylic acid can suppress and sulfanilamide aggravate the rheumatic process.

Dr. Lucile Moore and I have observed that rheumatic subjects treated for three weeks with salicylates following Group A streptococcal nasopharyngitis escaped rheumatic attacks (7). Furthermore, I have observed that in young male Navy personnel treated with large doses of salicylates at the onset of a rheumatic attack, the inflammatory rheumatic reactions can be suppressed. In this phase of the disease, salicylates did not reverse the rheumatic process or, so far as I could determine, modify the duration of rheumatic activity. I am of the opinion, expressed during World War II, that salicylic acid is not the final solution to the therapeutic problems occurring in rheumatic fever and that one way of achieving the final solution will be opened by modifying the response of the host to infection (8).

Pertinent to the host response problem is the fact that an anti-vitamin, sulfanilamide, exerts a peculiar effect on the rheumatic "host chemistry." When administered in large doses during and following streptococcal throat infections, it may potentiate the rheumatic process. When administered during activity of the process, it may intensify rheumatic activity unless this effect is suppressed by salicylic acid.

I call your attention to these observations because they indicate that the rheumatic process, which is precipitated by an unidentified factor of certain strains of Group A hemolytic streptococcus, is subject to modification by two chemicals—one of which is known to be a competitor to a vitamin and to block by competitive inhibition a chain of reactions essential to multiplication of the bacterial cell.

VITAMIN DEFICIENCY IN RHEUMATIC FEVER

That deficiency of any vitamin is associated with the genesis of rheumatic fever has not been demonstrated. However, a number of observers have shown that the blood level of ascorbic acid is low in this and other infectious processes. We have shown that abnormalities in cholesterol and in vitamin A metabolism exist during rheumatic fever (9). More interesting to me, however, is the observation that underprivileged children who were highly susceptible to rheumatic fever had diets that were deficient in a number of constituents including ascorbic acid but chiefly in protein, vitamin A, calcium, and iron (10).

[3] One of these patients died subsequently of acute pneumococcus endocarditis. The other was leading a normal life when last interviewed in January, 1949; however, her blood sedimentation rate was elevated.

Furthermore, several investigators attacking rheumatic problems from different angles have indicated that the rheumatic reaction may be prevented by diet (11, 12). However, this observation has not yet been demonstrated in a mass study. Together, these observations would seem to indicate that the highly susceptible rheumatic subject may have had a poor nutritional background, that just prior to and during rheumatic activity the body economy makes excessive demands on a number of substances, and that perhaps the normal metabolism of some of these substances is deviated from during a post-streptococcal crisis associated with sensitization.

METABOLIC CONDITION OF THE HOST

That the rheumatic state is influenced to some degree by the metabolism of the host seems indisputable. For example, the severity of the disease is markedly lessened by the hormonal changes which occur at puberty. Furthermore, the metabolic state which accompanies pregnancy appears to afford some freedom from rheumatic activity in subjects who have manifested great susceptibility. Moreover, rheumatic patients with myxoedema following total thyroidectomy seem refractory to the rheumatic reaction. This is also true of children with nephrosis and diabetes mellitus. In these diseases there is an increase in the level of blood lipids. On the other hand, subjects with hyperthyroidism and those receiving therapeutic doses of thyroid extract often show low blood lipid levels and increased susceptibility to rheumatic fever.

EFFECT OF LIPIDS

Just prior to World War II, we began studies on the feeding of lipids to rheumatic subjects. Egg yolk was selected because it could be administered without harm in large quantities (10, 13). One group of patients received egg yolk powder for four weeks following streptococcal nasopharyngitis; another group of quiescent rheumatic subjects maintained their usual diet reinforced with egg yolk powder for months prior to infection. As you know, powdered egg yolk is about 51 per cent lipid. This is composed mostly of neutral fats. The fatty acids present in highest concentration are oleic and palmitic. A large amount of lecithin, some cholesterol, and cephalin are also present. Egg yolk powder equivalent to eight to ten yolks was administered daily to a small group of rheumatic children known to be highly susceptible to rheumatic recrudescences. Group A streptococcal infections of the upper respiratory tract did not precipitate rheumatic reactions in these children under these experimental conditions. It appeared to us that one or more constituents of egg yolk may have modified the metabolism of the host during the post-streptococcal sensitization crisis and prevented a decompensation in metabolism.

In this connection it is of interest that Steiner and Domanski found (14) that the feeding of egg yolk powder to man and dog produced hypercholesteremia. They were of the opinion that the "lecithin content of the egg yolk powder appears to be an important factor in the elevation of the serum cholesterol because comparable effects were not obtained by diets rich in fat and cholesterol, even with the addition of 10 gm. crystalline cholesterol daily" (14).

In addition to lipids, egg yolk also contains a high concentration of protein in the form of vitelline and livetin. You know the significance of proteins as building stones for the synthesis of antibodies, enzymes, and hormones. You will recall that I pointed out above that highly susceptible rheumatic children had received a diet deficient in protein. Whether this is important in the complex metabolism of the host remains to be determined. However, it may well be significant to lowered pituitary activity, inasmuch as a high-protein diet has been shown to stimulate the pituitary gland (2).

CONDITIONING FACTORS OF RHEUMATIC FEVER

At this time, it seems to me reasonable to accept as a working hypothesis that the rheumatic subject has a metabolic problem which awaits definition. Ordinarily the rheumatic subject is metabolically compensated. However, decompensation may occur during the crisis which follows recovery from Group A hemolytic streptococcal infection of the upper respiratory tract. Decompensation appears to be associated with sensitization. But the biochemistry of sensitization and the forces potentiating sensitization are unknown. Perhaps even in this cellular activity, the pituitary gland will again prove to be the "conductor"!

I should like to re-emphasize that for at least a decade we have considered rheumatic fever a summation disease—a summation of genetic type, early nutrition, infection, and reaction to infection. Important to investigators in the field of nutrition is the concept that the conditioning factors of rheumatic fever are a combination of hereditary constitution and diet (11), a combination which has recently been termed genetotrophic by Williams, Berry, and Beerstecher (15) who suggest "that genetotrophic factors may be important in many diseases of obscure etiology" and who write as follows:

> Recent developments in the field of biochemical genetics make it inescapable that each individual possesses a distinctive hereditary make-up and a metabolism which is distinctive as to its details because of differences in enzymic patterns. Partial genetic blocks somewhere along the metabolic assembly line are probably commonplace in the inheritance of individuals and these may give rise to augmented requirements for specific minerals, vitamins, amino acids, or other nutritional factors. On the basis of these genetic variations, it becomes possible for one individual to suffer from nutritional disease when his diet is wholly adequate from the standpoint of many other individuals.
>
> If attention is centered on the classification of those diseases in which no infective agent appears to be involved,

nutritional diseases such as pellagra, rickets, scurvy and beriberi, and diseases of *genetic* origin such as hemophilia, Huntington's chorea, etc., constitute highly important groups. So far as we know, however, no one has given attention to the existence of *genetotrophic* (geneto = genetic; trophic = nutritional) diseases—those in which the genetic background and nutritional factors jointly enter into the etiology.

The recent demonstration by Dr. Philip S. Hench and his colleagues (16) that cortisone reverses the rheumatic process appears invaluable—not only because cortisone provides a therapeutic measure, but also (and this may well be even more important) because this demonstration will intensify research on the metabolic defect of the rheumatic subject. Perhaps of wider significance are the extensive screening studies on adrenal corticotrophic hormone (ACTH) being conducted through the efforts of Dr. John R. Mote. Dr. Mote has recently stated in regard to ACTH, "It will help us to go a long way to find out why we get sick and why we get well."

THE RHEUMATIC FEVER RESEARCH INSTITUTE

While these important biochemical researches are in progress I hope that students of nutrition will find the answer to a key problem: Can diet be reinforced to protect the pituitary gland, the adrenal glands, or the reactions which they control during the crisis of sensitization? The time is opportune, for we are in a transition stage which, as Hench recently stated, represents "the beginning of the end and not the end of the beginning." With this opinion I am in full agreement. In fact, in my opinion, the months ahead will probably add to our therapeutic armamentarium not only other hormones but also a number of plant sterols which can be produced synthetically. During these exciting months, my colleagues at the Rheumatic Fever Research Institute will continue to search for the mechanism of rheumatic diseases. Your inquiring minds may question the justification of a Research Institute, which is composed of a team of scientists and clinical investigators, directing its energies to the problems of a disease mechanism when day after day many persons die because of rheumatic fever.

There are at least two reasons for this. First, to my way of thinking, even though the mechanism of rheumatic fever is unknown, death from this disease has been preventable for a decade. Rheumatic fever rarely kills in the first attack. Subsequent attacks can be prevented, as stated above, by continuous prophylaxis with antibacterial drugs or with salicylates following a streptococcal upper respiratory tract infection. Furthermore, in persons who have not received any prophylaxis prior to infection or prior to activation of the rheumatic process, the extent of tissue injury can be reduced to a minimum, provided a salicylate dosage adequate to suppress inflammatory reactions is given and provided treatment is initiated early in the rheumatic attack. In these persons, the tissue changes occurring prior to suppression by salicylates are reparable.

Second, since cortisone and ACTH induce a wide variety of biochemical reactions, some of which may do injury to the host, they cannot be considered the final solution to the therapeutic problem. The aim of a research team must be for "precision bombing" on the rheumatic reaction. Meanwhile, these hormones will also reduce the rheumatic fever mortality rate.

Nevertheless, these and perhaps more useful measures which may be developed empirically leave us on the periphery of our problems in prevention. We remain far away from our goal of making life as safe for the "genetically tagged" rheumatic subject as it is for the person who is not susceptible. To reach our goal, we must aim to determine those substances which are required to prevent the rheumatic state. To this end it is essential that we know what rheumatic fever is.

Sooner or later the biochemical lesion of rheumatic fever will be defined. The experiences so gained can be reasonably expected to serve as a model for determining other disease mechanisms and to provide useful information for persons working in the field of nutrition. The end will come. It always does. However, the end will come from work done along fundamental lines in the laboratory and not from words spoken on a platform, words which I have used here, not to justify fundamental research, but because I hope that they may help to define a fascinating disease problem. The problem of preventing rheumatic fever by nutrition merits our individual creative thinking, especially in this age when thought is being tightly harnessed even though it pertains to our search for Truth. Now, in leaving with you a problem, I have a purpose; namely, to provoke deeper thinking on the interrelations of diet, activity of endocrine glands, and the development of sensitization.

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Relation of Deficiencies to Degenerative Disease

Arthritis, arteriosclerosis, and other degenerative diseases may be the results of prolonged vitamin deficiencies, Professor Agnes Fay Morgan, Head, University of California's Department of Home Economics, suggested at the 116th national meeting of the American Chemical Society on September 21 in Atlantic City. Dr. Morgan, recipient of the Society's 1949 Garvan Medal honoring women in chemistry, presented a paper on "Mammalian Protein and Amino Acids."

She reported that certain vitamin deficiencies, especially those of riboflavin and pantothenic acid, have the same effect on the body as external stresses, such as exposure to high altitude. When the body is subjected to severe external stress, adrenal cortex hormones are produced in unusual amounts, and as a result the body swiftly converts carbohydrates into energy to meet the emergency. However, according to Dr. Morgan, vitamin-deficient animals are unable to step up the manufacture of the vital hormones, and, therefore, do not adjust to the physiological demands.

The theory that some people, because they inherit an abnormally high requirement for certain nutrients, suffer chronically from vitamin deficiency, even though they eat a good diet "raises fascinating possibilities as to the origin of such derangements as are seen in arthritis, arteriosclerosis, and other degenerative conditions," Dr. Morgan pointed out. "The recent demonstration of the value of an adrenal cortical hormone in the treatment of arthritis increases the interest attached to these interrelationships of vitamins and hormone mechanisms. Whatever may be the truth of these speculations, more light is urgently needed on the mechanism of all nutritional deficiencies and undoubtedly also nutritional excesses."

Dr. Morgan reported that in extreme cases of pantothenic acid deficiency, animals die because the adrenal cortex stops functioning. The effect on the adrenal glands of a lack of riboflavin is strikingly similar, she noted, to that of pantothenic acid, resulting in sudden collapse with hemorrhagic adrenals, extremely low blood sugar and liver starch, fatty livers, and hemoconcentration.

The supposed role of riboflavin and pantothenic acid vitamins in carbohydrate metabolism further suggested that the primary failure may be incurred in the carbohydrate oxidations and reductions in the tissues, and the adrenocortical exhaustion may be secondary according to Dr. Morgan.

Dr. Morgan also outlined a program of future experiments designed to learn: whether the metabolic defects produced by these vitamin deficiencies are mediated entirely through derangement of adrenocortical functions; how long therapy with adrenal cortical hormones can stave off harm to animals deficient in the two vitamins; and why lack of the vitamins ultimately destroys the activity of the adrenal cortex. She said, "Some of the efforts now under way in our laboratory to cast some light on these problems involve continuous administration of adrenal cortex hormones to young animals on the deficient diets, measurement of adrenal function by serum amylase determinations, uric acid-creatinine ratios in blood and urine, differential blood counts, utilization of acetate containing radioactive carbon for glycogen and cholesterol production, and further tests such as anoxia or forced muscular effort."

Guava for Baby Foods

High ascorbic acid content of guavas make this fruit especially suitable for baby foods, according to Margaret J. Mustard, Research Assistant at the University of Miami. Investigators have found the ascorbic acid in guavas to range from 24 to 480 mg. per 100 gm., depending upon the variety. At present work is being done at the University of Miami to develop a frozen guava puree, and it is planned to test the food on large samples of children.—*From Food Field Reporter, January 16, 1950.*

Editorial

APPOINTMENT OF PUBLIC RELATIONS DIRECTOR

Last month the Association took another important step in its Public Relations Program when Thelma Pollen joined the A.D.A. staff as Public Relations Director. Mrs. Pollen has had valuable experience in editorial-public relations work, in radio, and in advertising. She served as Director of the Office of Publications for the North Atlantic Area of the American Red Cross from 1942 to 1948. In this editorial and administrative position she cleared all printed and duplicated materials, work which included editing, organizing, and rewriting. She was responsible for interpretation of policies and procedures and for engendering harmonious public relations through the printed word. Mrs. Pollen was selected to write an administrative history of the Red Cross North Atlantic Area for the war period.

Her experience in radio has included work with two radio stations in Seattle, for one of which she was in charge of publicity and for the other of recorded programs. In the advertising field, Mrs. Pollen has written publicity and radio spot announcements for an advertising agency.

Mrs. Pollen claims the Hawaiian Islands as her birthplace. She holds a bachelor's degree in dramatic art from the University of Washington. Her interest in foods and nutrition appeared in her college career where she took two years of work in home economics. Recently Mrs. Pollen received a master's degree in home economics with major emphasis on foods and nutrition at New York University.

The Public Relations Program of the Association will be under Mrs. Pollen's direction. She will work closely with the A.D.A. Public Relations, Vocational Guidance, and Educational Exhibits Committees. Much of her time will be devoted to maintaining contacts with allied organizations. The publicity plans for the annual meeting will also be under her general supervision.

Upon entering this new phase of our Public Relations Program, the Association looks forward to ever-expanding contacts with the public.

REPORT OF THE NOMINATING COMMITTEE, AMERICAN DIETETIC ASSOCIATION, 1949–50[1]

The Nominating Committee of the American Dietetic Association—Helen H. Anderson, Mary I. Barber, Beulah Hunzicker, E. Neige Todhunter, and Lucille M. Refshauge, Chairman—presents the following ballot for 1950–51:

PRESIDENT-ELECT

Margaret A. Ohlson: B.A., State College of Washington, Pullman; M.S., Ph.D., University of Iowa, Iowa City

Positions held:
- Cafeteria Director, Y.W.C.A., Salt Lake City, Utah
- Executive Dietitian, Washington Veterans Home, Retsil, Washington
- Therapeutic Dietitian, Sacred Heart Hospital, Spokane, Washington
- Instructor in Nutrition, Indiana University Hospitals, Indianapolis
- Assistant Professor, Department of Foods and Nutrition, Michigan State College, East Lansing
- Associate Professor, Department of Foods and Nutrition, Iowa State College, Ames
- Present position—Professor and Head, Department of Foods and Nutrition, Michigan State College, East Lansing

Professional activities:
- Secretary, A.D.A.
- Chairman and Member, Membership Committee, A.D.A.
- Secretary, Investigation Board, A.D.A.
- President, Iowa Dietetic Association
- Vice-Chairman, Food and Nutrition Division, American Home Economics Association
- Editor: *Omicron Nu Journal*
- Member: Iowa Nutrition Committee, Michigan Nutrition Committee, North Central Committee on Conservation of Nutritive Value of Foods, North Central Committee on Nutritional Status

Publications:
- Author—*Laboratory Handbook for Dietetics*
- Eight papers in this JOURNAL and articles in ten other professional publications

SECRETARY

Esther A. Atkinson: B.S., University of Nebraska, Lincoln; M.S., Kansas State College, Manhattan

Positions held:
- Director of Home Economics and Director of Food Service, College Residence Hall, McPherson College, McPherson, Kansas.
- Instructor in Institutional Management, University of Idaho, Moscow
- Food Supervisor, Army Mess Unit, and Instructor in Quantity Cookery, Kansas State College, Manhattan

[1] Other nominations may be made by nomination petitions signed by not less than 400 members of the Association, of whom not more than 30 shall be from any one state, assented in writing by the person or persons named thereon as nominees, and filed with the Secretary at the office of the Association on or before June 15, 1950.

Present position—Associate Professor and Head, Department of Hotel and Institution Management, Pennsylvania State College, State College

Professional activities:
Member, Membership Committee, A.D.A.
Chairman, Committee on Revision of Experience Forms for Evaluation of Experience in Lieu of Internship for A.D.A. Membership
President-Elect, Pennsylvania Dietetic Association
Chairman, Department of Institution Administration, American Home Economics Association
Member, Advisory Board, *Journal of Home Economics*

Marguerite L. Pettee: B.S., Elmira College, Elmira, New York; M.S., University of Chicago

Positions held:
Associate Home Demonstration Agent, Concord, Massachusetts
County Home Demonstration Agent, Northampton, Massachusetts
Present position—Chief Nutritionist, Medical College of Virginia Clinics, Richmond

Professional activities:
Chairman, Diet Therapy Section, A.D.A.
Member, House of Delegates, A.D.A.

Publications:
Author—*Nutrition and Food Supply: The War and After; Diet Manual*, Medical College of Virginia Clinics;
Section on diet in *Home Nursing Care of Rheumatic Fever Patients* by S. Sadler
Articles in *Annals of the American Academy of Political and Social Science* and other publications

SPEAKER OF THE HOUSE OF DELEGATES

Helen S. Mitchell: A.B., Mt. Holyoke College, South Hadley, Massachusetts; Ph.D., Yale University, New Haven, Connecticut; further graduate study, University of Chicago

Positions held:
Professor of Nutrition and in charge of nutrition research, Battle Creek College, Battle Creek, Michigan
Research Professor in Nutrition, University of Massachusetts, Amherst
Chief Nutritionist, Office of Defense Health and Welfare Services, Federal Security Agency, Washington
Chief Nutritionist, Office of Foreign Relief and Rehabilitation Operations, Department of State, Washington
Present position—Dean, School of Home Economics, University of Massachusetts, Amherst

Professional activities:
Chairman, Professional Education Section, A.D.A.
Chairman, A.D.A. Loan Fund for Graduate Study Committee
Member, Constitution Revision Committee, A.D.A.
Member, House of Delegates, A.D.A.

Publications:
Co-author—*Nutrition in Health and Disease* by Cooper, Barber, and Mitchell
Numerous scientific papers and popular articles on nutrition in professional and lay publications

Doris T. Odle: B.S., Purdue University, Lafayette, Indiana; M.S., Kansas State College, Manhattan

Positions held:
Assistant Chief Dietitian, Presbyterian Hospital, Denver
Chief Dietitian, Presbyterian Hospital, Denver
Assistant Manager, Tea Room, Kansas State College, Manhattan
Chief Dietitian, University of Colorado Department of Medicine (Colorado General Hospital), Denver

Professional activities
Convention Chairman, A.D.A.
Member, House of Delegates, A.D.A.
Member, By-Laws Committee, House of Delegates, A.D.A.
Chairman, Joint Committee of the American Hospital Association and A.D.A.
President, Colorado Dietetic Association
President, Denver Dietetic Association

Publications:
Papers in this JOURNAL and in *Hospitals*

SPEAKER-ELECT OF THE HOUSE OF DELEGATES

Helen L. Gillum: A.B., Indiana State Teachers College, Terre Haute; M.S., Columbia University, New York City; Ph.D., University of California, Berkeley

Positions held:
Teacher of Home Economics, East Chicago, Indiana
Chief Dietitian, U. S. Public Health Service Marine Hospital #41
Assistant Professor and Associate Professor, Indiana State Teachers College, Terre Haute
Lecturer and Assistant Professor, University of California, Berkeley
Present position—Associate Professor of Home Economics and Associate Biochemist, Agricultural Experiment Station, University of California, Berkeley

Professional activities:
Member, House of Delegates, A.D.A.
Member, Council of the House of Delegates, A.D.A.
President, California Dietetic Association

Publications:
Papers in the *Journal of Nutrition* and the *Proceedings for the Society for Experimental Biology and Medicine*

Mary W. Northrop: A.B., Vassar College, Poughkeepsie, New York; M.S., Teachers College, Columbia University, New York City

Positions held:
Dietitian, Muncie Home Hospital, Muncie, Indiana
Chief Dietitian, Montefiore Hospital, New York City
Present position—Chief Dietitian and Housekeeper, King County Hospital System, Seattle, Washington

Professional activities:
Secretary, A.D.A., and Chairman, Membership Committee
Chairman, Council of the House of Delegates, A.D.A.
Chairman, Projects for Professional Education and Food Administration Sections, A.D.A.
President, Washington State Dietetic Association

Publications:
Articles in this JOURNAL and other professional publications

DELEGATES-AT-LARGE

The following (six of whom are to be elected) have been selected as candidates for Delegates-at-Large. Two of those elected will serve for one year as senior delegates-at-large; two for two years who shall be senior delegates the second year; and two for three years.

A. June Bricker: B.S., Battle Creek College, Battle Creek, Michigan

Positions held:
- Assistant Therapeutic Dietitian, University of Michigan Hospital, Ann Arbor
- Nutrition Director, Connecticut Dairy Food Council, Hartford
- Present position—Director, Home Economics Bureau, Health and Welfare Division, Metropolitan Life Insurance Company, New York City

Professional activities:
- Member, House of Delegates, A.D.A.
- Member, A.D.A. Committee for the American Association for the Advancement of Science
- Chairman, Food Administration Section Project, A.D.A.
- Vice-President, Connecticut Dietetic Association

Evelyn A. Carpenter: B.S. and graduate study, Drexel Institute of Technology, Philadelphia

Positions held:
- Dietitian, West Philadelphia Hospital for Women
- Dietitian, Physicians and Surgeons Hospital, Wilmington, Delaware
- Present position—Chief Dietitian, Philadelphia Hospital for Contagious Diseases

Professional activities:
- Convention Chairman, A.D.A.
- Member, Council of the House of Delegates, A.D.A.
- Member, By-Laws Committee, House of Delegates, A.D.A.
- President, Pennsylvania Dietetic Association
- President, Philadelphia Dietetic Association

Clara E. Childress: B.S., Woman's College, Furman University, Greenville, South Carolina

Positions held:
- Assistant Dietitian, Long Island College Hospital, Brooklyn, New York
- Assistant Dietitian, Duke University Hospital, Durham, North Carolina
- Dietitian, Martha Jefferson Hospital, Charlottesville, Virginia
- Dietitian, Presbyterian Hospital, New York City
- Dietitian, U. S. Army
- Present position—Chief, Education Section, Dietetic Division, Veterans Administration, Washington D. C.

Professional activities
- Chairman, Sub-Committee of the Food Administration Section, A.D.A.

Publications:
- Papers in this JOURNAL

Mary M. Harrington: B.S., Michigan State College, East Lansing; M.A., University of Michigan, Ann Arbor

Positions held:
- Dietitian, Hurley Hospital, Flint, Michigan
- Dietitian, U. S. Army
- Metabolism and Research Dietitian, University of Michigan Hospital, Ann Arbor
- Present position—Assistant Director, The Harper Hospital, Detroit, and Director of Dietetics

Professional activities:
- Vice-President, A.D.A.
- Chairman, Diet Therapy Section, A.D.A.
- Chairman, Professional Education Chairman, A.D.A.
- Member, House of Delegates, A.D.A.
- Chairman, Projects for Food Administration, Diet Therapy, and Professional Education Sections, A.D.A.
- President, Michigan Dietetic Association

Publications:
- Papers in this JOURNAL and other professional publications

E. Evelyn Smith: B.S., M.A., Teachers College, Columbia University, New York City

Positions held:
- Dietitian, Crouse-Irving Hospital, Syracuse, New York
- Dietitian, Allegheny General Hospital, Pittsburgh
- Instructor in Household Science, Macdonald College, McGill University, Quebec, Canada
- Assistant Professor, Department of Home Economics, Pennsylvania State College, State College
- Associate Professor and Chairman of Division of Institution Management, University of Illinois, Urbana

Professional activities:
- Chairman and Member, Placement Bureau Board, A.D.A.
- Member, House of Delegates, A.D.A.
- Member, Nominating Committee, Membership Committee, War Activities Committee, Foreign Scholarship Committee, By-Laws Revision Committee, Constitution Committee, A.D.A.

Ethel Summerour: B.S., Mississippi State College for Women, State College

Positions held:
- Manager, College Tea Room, Mississippi State College for Women, State College
- Dietitian, Vicksburg Hospital, Vicksburg, Mississippi
- Chief Dietitian, Employees' Hospital of the Tennessee Coal, Iron and Railroad Company, Fairfield, Alabama
- Dietitian, Clarksdale School of Aviation, Clarksdale, Mississippi
- Dietitian, Marshall College, Huntington, Virginia
- Present position—Dietitian, College Dining Hall, Mississippi State College for Women, Columbus

Professional activities
- Member, House of Delegates, A.D.A.
- President, Alabama Dietetic Association
- President, Mississippi Dietetic Association

Helen E. Walsh: B.S., Iowa State College, Ames; M.S., Teachers College, Columbia University, New York City

Positions held:
- Nutritionist, Los Angeles County Health Department and Los Angeles County Tuberculosis and Health Association
- Supervising Nutritionist, Los Angeles County, State Relief Administration of California
- Assistant Professor, School of Home Economics, Oregon State College, Corvallis
- Nutrition Field Consultant, National Nutrition Program, Washington, D. C.
- Nutrition Consultant, Nutrition Section, States Relations Division, U. S. Public Health Service, Washington, D. C.
- Chief, Nutrition Service, California State Department of Public Health, San Francisco

Professional activities:
- President, A.D.A.
- Vice-President, A.D.A.

Chairman, Community Nutrition Section, A.D.A.
Chairman, Community Education Section, A.D.A.
President, California Dietetic Association

Frances Welch: B.S., North Texas State Teachers College, Denton; M.A., Texas State College for Women, Denton

Positions held:
Manager, School Lunchroom, Dallas
Assistant Professor in Home Economics, North Texas State Teachers College, Denton
Present position—Director of School Lunchrooms, Dallas

Professional activities:
Member, House of Delegates, A.D.A.
President, Texas Dietetic Association

Publications:
Papers in this JOURNAL, *Practical Home Economics*, and *The Nation's Schools*

NOMINATING COMMITTEE

The following candidates (five of whom are to be elected) for the Nominating Committee for 1950–51, have been selected as representatives of five geographical areas determined on the basis of the distribution of the membership. Members are to vote on one person from each geographic area.

Geographical Section I[2]

Helen C. Hamilton: B.S., Teachers College, Columbia University, New York City; post-graduate work, New York University

Positions held:
Manager, Longacre Dining Room, New York Telephone Company, New York City
Social service worker, University of Chicago Settlement
Nutritionist, Elizabeth McCormick Memorial Fund, Chicago
Research Worker, American Soap and Glycerine Producers Association, New York City
Nutritionist, General Foods Corporation, New York City
Present position—Director, Home Service Department, Corn Products Refining Company, New York City

Professional activities:
President-Elect, New York State Dietetic Association

Effie May Winger: Diploma, Rochester Institute of Technology; B.S., Teachers College, Columbia University, New York City

Positions held:
Chief Dietitian, Cottage Hospital, Santa Barbara, California
Chief Dietitian, Swedish Hospital, Seattle, Washington
Chief Dietitian, Rochester General Hospital, Rochester, New York
Present position—Chief Dietitian, New England Deaconess Hospital, Boston

Professional activities:
Member, House of Delegates, A.D.A.
Member, Placement Bureau Board, A.D.A.
President, New York State Dietetic Association
President, Rochester (N. Y.) Dietetic Association

Publications:
Articles in *Modern Hospital* and *Hospitals*

[2] Geographical Section I includes: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, and Pennsylvania.

Geographical Section II[3]

Janet N. Jardine: B.S. and M.S., Teachers College, Columbia University, New York City

Positions held:
Assistant Dietitian, Bridgeport Hospital, Bridgeport, Connecticut
Dietitian, Lewistown Hospital, Lewistown, Pennsylvania
Staff Member, Institution Management Department, College of Home Economics, Cornell University, Ithaca, New York
Food Production Manager, The Maramor, Columbus
Instructor in Institution Management, Rhode Island State College, Kingston
School Lunch Supervisor, New Jersey State Department of Education, Trenton
Present position—State School Lunch Supervisor, New Jersey Department of Education, Trenton

Professional activities:
Editor, Bulletin of the New Jersey Dietetic Association

Publications:
Articles in *The Nation's Schools* and state educational publications

Margaret F. Ross: A.B., Elmira College, Elmira, New York

Positions held:
Ward Dietitian, Memorial Hospital, Charlotte, North Carolina
Present position—Head Therapeutic Dietitian, Memorial Hospital, Charlotte, North Carolina

Professional activities:
Member, House of Delegates, A.D.A.
President, North Carolina Dietetic Association
Editor, Bulletin of the North Carolina Dietetic Association

Geographical Section III[4]

Adelia M. Beeuwkes: B.S., Michigan State College, East Lansing; M.S., University of Michigan, Ann Arbor

Positions held:
Therapeutic Dietitian, University Hospital, Ann Arbor
Therapeutic Dietitian, New York Hospital, New York
Therapeutic Dietitian, Presbyterian Hospital, New York City
Nutritionist, University Health Service, Ann Arbor
Instructor in Nutrition, Division of Hygiene and Public Health, University of Michigan, Ann Arbor
Instructor in Dietetics, University of Michigan Medical School, Ann Arbor
Present position—Assistant Professor of Public Health Nutrition, University of Michigan School of Public Health, Ann Arbor

Professional activities:
Chairman, Community Nutrition Section, A.D.A.
Chairman, Program Advisory Committee, A.D.A.
President, Michigan Dietetic Association
President, Ann Arbor Dietetic Association

Publications:
Papers in this JOURNAL and other professional publications

[3] Geographical Section II includes: New Jersey, Delaware, Maryland, Washington, D. C., Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, West Virginia, Tennessee, Kentucky, Arkansas, and Louisiana.

[4] Geographical Section III includes: Michigan, Ohio, Indiana, and Illinois.

Marjorie Hall Siler: B.S., Battle Creek College, Battle Creek, Michigan

Positions held:
Assistant Dietitian, Cincinnati General Hospital
Director, Dietary Department, Cincinnati General Hospital
At present—homemaker

Professional activities:
Convention Chairman, A.D.A.
Chairman, Vocational Guidance Committee, A.D.A.
Member, Public Relations Committee, A.D.A.
President, Ohio Dietetic Association
President, Cincinnati Dietetic Association

Geographical Section IV[5]

Mary C. Barnes: B.S., Oklahoma A. & M. College, Stillwater; M.A., Teachers College, Columbia University

Positions held:
Administrative Dietitian, Barnes Hospital, St. Louis
Assistant Dietitian, City Hospital, St. Louis
Head Dietitian, City Tuberculosis Hospital (Koch) St. Louis
Head Dietitian, Murray Hall, Oklahoma A. & M. College, Stillwater
Head Dietitian, Men's Residence Hall, University of Michigan, Ann Arbor
Dietitian, U. S. Army
Present position—Assistant Director, College Food Units, Oklahoma A. & M. College, Stillwater

Professional activities:
Member, Council of the House of Delegates, A.D.A.

Mary Ellen Dambold: B.S., Oklahoma A. & M. College, Stillwater

Positions held:
Dietitian, Grant Hospital, Chicago
Dietitian, Michael Reese Hospital, Chicago
Administrative Dietitian, University of Michigan Hospital, Ann Arbor
Present position—Chief Dietitian, Baylor University Hospital, Dallas

Professional activities:
Chairman, Food Administration Section, Texas Dietetic Association

Geographical Section V[6]

Margaret Ritchie: Diploma, Skidmore College, Saratoga Springs, New York; B.S. and M.A., Columbia University, New York City

Positions held:
Director, School of Home Economics, Battle Creek College, Battle Creek, Michigan
Present position—Director, Home Economics Department, University of Idaho, Moscow

Professional activities:
Secretary, A.D.A.
Chairman, Professional Education Section, A.D.A.
President, Idaho Dietetic Association

Inez Stocking: B.S., Battle Creek College, Battle Creek, Michigan; post-graduate work, Columbia University, New York City

Positions held:
Dietitian, Edward W. Sparrow Hospital, Lansing, Michigan
Chief Dietitian, Deaconess Hospital, Spokane, Washington
Dietitian, U. S. Army
Present position—Chief Dietitian, Veterans Administration Hospital, Fort Logan, Colorado

Professional activities:
Chairman, Convention Hospitality Committee, A.D.A.

[5] Geographical Section IV includes: Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

[6] Geographical Section V includes: Hawaii, Washington, Oregon, California, New Mexico, Arizona, Idaho, Utah, Nevada, Montana, Wyoming, and Colorado.

Physiologic Effect of Eating Cold Food

At the Laboratory of Physiological Hygiene, University of Minnesota, the physiological effect of cold food was studied. Ice cream served as the test food. The gastric motility, blood sugar concentration, blood pressure, pulse rate, electrocardiogram, and skin temperature responses to internal thermal stimulation were measured in normal young men.

Gastric motility was not greatly altered by the temperature of a test meal when served. Blood sugar concentration was slightly and promptly increased, regardless of the temperature, but the response was significantly greater when the test meal was served cold. Finger skin temperature dropped as much as 3.5°C. when a cold test meal was ingested. The response was prolonged and did not return to normal within 50 min.

Increases in blood pressure of the subjects of 15 to 20 mm. were produced during the time the 400-gm. cold meal was eaten; no increase occurred with the 100-gm. meal. Pulse rate was increased 18 to 20 beats per minute during the ingestion of the 400-gm. cold meal. With the 100-gm. cold meal, the maximal increase in pulse rate was less than half as great and the response to the 400-gm. cold test meal was about the same as that produced by immersion of the hand in ice water for 1 min. None of the test meals produced significant electrocardiographic responses except for the cycle length.—*Abstracted from "Some Responses to Hot and Cold Test Meals" by Austin Henschel, Henry Longstreet Taylor, and Ancel Keys. J. Applied Physiology 2:208 (October), 1949.*

Current Comment

PUBLICIZING THE PROFESSION OF DIETETICS[1]

ETHEL M. THOMPSON, PH.D.

Professor of Nutrition, University of Arizona, Tucson

Publicizing the profession of dietetics and recruiting college students falls, in most states, upon members of the national and state dietetic associations. We are busy people, already engaged in full-time work—usually in one of the specialized areas of the field. Therefore, we must make use of all educational aids—especially material which has been prepared by the American Dietetic Association. At present, there are available from that source excellent pamphlets, booklets, slides, and the first of a series of posters, all of which are available at minimum cost.

These aids are indispensable in this work; yet to make a direct and effective impression upon all potential students throughout a state, time must be spent in contacts—interviews which have a personal appeal. The information should be adapted to local and state situations in order to acquaint people with their local and state departments and local and state leaders. Any attempt in the first contact to interest them in the broader, more remote activities and personalities at the national level is largely wasted effort.

The high school period is a time in students' lives when their interests are self-centered and justifiably very personal. They want to know *what* they are going to do next year, *where* they are going, and *who* is the person who can tell them what they want to know.

In many states, as in Arizona, the member of the American Dietetic Association engaged in college and university teaching and research is expected by her administration to limit her extra-curricular activities to special talks at association meetings and to community work for organizations *other than* high schools. Direct contact with high schools is now left in most cases to vocational counselors.

Therefore, as Chairman of the Arizona Vocational Guidance Committee, and with the help of the Committee members, I attempted to meet the situation within our state under the following conditions:

(a) We could not travel nor have direct personal interviews through the medium of the high school.

(b) Our message had to be clear cut and brief enough to attract the attention of girls from the eighth grade through each year of high school and to appeal to *all* girls, especially those scientifically inclined and not just those already enrolled in homemaking classes.

(c) It should be a procedure which could be repeated each year *by request*—if possible without too much expenditure of Association funds.

PREPARING AND DISTRIBUTING RECORDINGS

We immediately turned to the excellent script "Careers in Dietetics" prepared by the American Dietetic Association, believing that this was our best reference. After consulting with several of our vocational counselors throughout the state, we decided that the most effective procedure would be to have the script cut on discs for playback. It seemed that a recording of this type would meet all three conditions previously listed. We were assured that if we used green seal, 12-in., unbreakable discs, 78 r.p.m. (revolutions per minute), practically all high schools could used them. This proved to be true; only one school reported that it had no playback instrument.

To start with, the Radio Bureau of the University of Arizona very generously cut eight discs gratis, using the voice of a male member of the speech class and that of Ruth Reed, Dietitian of the Tucson Medical Center. The voices proved to be resonant and carried well. The discs were cut on both sides, and took 10 min. to run. A soft, rather than than a permanent needle was recommended.

We also prepared a minimum number of enclosures to send with the recording when it was distributed to schools. These enclosures included:

(a) A brief questionnaire concerning the groups who had heard the recording, the number, and a request for suggestions for next year.

(b) A stamped envelope.

(c) Twelve cents in stamps for return from any part of the state.

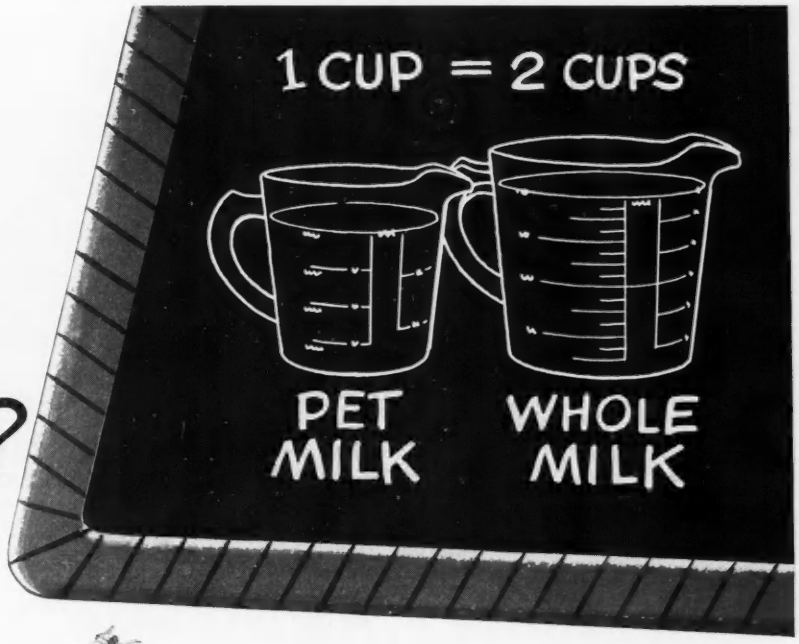
(d) A mailing sticker.

(e) A return photoholder.

Using the Public School Directory to obtain in-

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 13, 1949.

are you teaching this basic economy?



In the hands of your student nurses rests a responsibility for helping American families increase milk consumption. As visiting nurses or in private practice, they will meet the problem of providing adequate milk nourishment —often within a restricted budget. But limited funds need not mean a low nutritional standard—when your students know the *basic economy* of evaporated milk.

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formation on the location and size of the schools in the state, we first sent individually typed letters to the principal of each of some seventy schools. We outlined the need for dietitians, described the recorded interview we proposed to send, and asked if he would be interested in having his students hear it. All responded favorably, so we promptly sent discs to the largest high schools first.

USE OF THE RECORDS

About thirty-five high schools used the records during the first year. At the end of the second year only four schools had failed to use the recording for the following reasons:

(a) One school had no playback instrument.
(b) In one small school, the girls were not interested. This is to be followed up.
(c) In one school, the instrument was broken.
(d) In another, the recording arrived too late in the school year to be used.

Various groups of girls heard the recording. In some places they were:

(a) Future Homemakers of America.
(b) Beginning and advanced homemaking classes.
(c) All health classes.
(d) All senior high school counselors.
(e) The Girls Guidance program.
(f) Orientation classes.
(g) Senior high school girls only.
(h) All girls taking home economics.
(i) Eighth grade girls.

BOUQUETS AND CRITICISMS

When the principals returned the discs with their comments, a number of useful suggestions were made. Their comments include some of the following:

"Recording was a most effective means".... "Record is good but could be better".... "Good and complete information".... "Excellent means as is".... "This type of publicity and vocational information was readily received by our girls, of whom 905 heard the record."

"A more thorough explanation about dietetics—what it is from the viewpoint of the eighth grader—so that a student with no background in the field would understand what it is about"....

"Have planned field trips for eighth graders as well as high school students".... "Visit a diet kitchen in operation".

"Perhaps a mimeographed sheet to distribute after playing the record, explaining some important points brought out in the recording would be helpful".

"A personal representative".... "Posters, pamphlets, sound movies—visits by yourself or representative".... "Have vocational talks for girls' clubs"....

"A short motion picture film would be helpful."

"Similar records would be helpful. The girls enjoyed it".... "More recorded interviews".... "Should use women's voices entirely."

Toward the end of the year, we were amused to read the message, "The record seems to have an echo in it."

Perhaps the most gratifying comment was: "Send this same record to us again next year."

We also used this script in an interview over our most popular state-wide breakfast radio program known as "Arizona Highlights." It is of special interest here that the director of the station said he appreciated the fact that the script was so well written that it could be used almost without change.

RESULTS

Our program is to continue another year. We particularly want to thank the directors of our University radio station, since the cutting of the discs was no small assignment. This program did fulfill the three requirements which were outlined earlier, and moreover, the cost was held to a minimum. Our initial expenditures were:

ITEM	COST
8 discs, @ $1.80	$14.40
Photoholders	5.00
Stamps	5.80
Total	$25.20

As indicated in the comments, we felt that our work had been fruitful, and we are pleased to report from our state that enrollment in home economics this fall has had some increase. Of course, we cannot report to what extent we can justifiably attribute this increase to the work of our committee, but we are certain that we have had a part in it.

The members of this committee—Ruth Reed, Marbeth Bell, Mary Doud, and myself—feel that perhaps consideration might be given by the vocational guidance committees of other state dietetic associations to the possibility of using this same device in their recruiting work. It might even be possible for new scripts to be recorded and made available to the various states, as desired, by the national Association—or possibly upon request directly to vocational counselors in high schools, the state association covering the cost.

ARKANSAS' DIETETIC TRAVELER[1]

GERALDINE WAGGENER

Dietitian Consultant, Arkansas State Board of Health, Little Rock

A description of the work of the dietitian consultant assigned to the division of Hospitals in the Arkansas State Board of Health will be covered in this paper. However, within the last two months, two nutritionists were added to the two already on the

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 12, 1949.

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Wear-Ever Heavy Duty Utensils similar to most of those shown in this photograph, give extra long wear. They're made of an especially hard, tough aluminum alloy in very thick metal and have double-thick edges and bottoms.
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staff of the Division of Maternal and Child Health of our State Board of Health. The new assignments include dietary consultation service to certain institutions as well as educational work with public health nurses. Both nutritionists are experienced hospital dietitians. One will give dietary consultation service to hospitals in seven counties in the section of the state in which she is located. The other will give dietary consultation service to child-caring institutions throughout the state.

The magnitude of the field requiring the services of a consultant dietitian can perhaps best be expressed by the relationships between the number and size of the hospitals and the number of trained dietitians working in those hospitals. There are 168 licensed hospitals in Arkansas, not including federal hospitals, of which 103 have a capacity of 25 beds or less, 38 have 26 to 50 beds, 12 have 51 to 100 beds, and 15 have over 100 beds. In all 168 hospitals, there are only six trained dietitians. In a large percentage of our hospitals, therefore, one big problem is often the lack of training and poor managerial ability of the person in charge of the dietary department. She may be a good cook who was hired at a low salary, but a person with no knowledge of adequate menu planning, therapeutic diets, food cost accounting, and quantity food purchasing.

The services the dietitian consultants give can be classed as educational, regardless of whether they consist of personal visits, written material sent to hospitals, or institutes which are held. I regard my personal contacts with hospital staffs as the means of opening the way for the rest of our educational program, as well as being important in respect to the guidance that can be given during a visit. The staffs of hospitals are more prone to request information verbally than by letter, and many times employees in the kitchens give me excellent suggestions for improving their departments. These visits also give me a chance to look for and understand more clearly the specific problems of our hospitals.

Many decisions must be made by the dietitian consultant as far as her time allotment is concerned. Should she spend the major portion of her time with the larger hospitals where more patients can be aided, or with the smaller hospitals, which are, as a rule, more in need of her services? The time that can be spent at any one hospital is naturally limited, although in some cases I have spent several days, and in rare instances one or two weeks. It is the feeling of our Division of Hospitals that it is better to take enough time at each hospital to help really to solve the problems than to make hurried visits to a greater number of hospitals. Good personal relations with the hospital staff are most important, for unless they feel that our suggestions are worth while and practical, interest and enthusiam are sure to decline. One measure of the results so far obtained is the increasing number of hospitals that are requesting our services. Another encouraging result is the improvement noted on return visits.

DIETARY INSTITUTES FOR HOSPITAL FOOD WORKERS

We realized at the beginning of our program that individual visits to hospitals would be a slow way to raise the standards of the dietary departments. Therefore, we decided to hold hospital dietary institutes in various parts of the state to help those food service supervisors who are inexperienced or relatively inexperienced and lacking in the educational background to fill the positions they hold. In addition to food service supervisors, hospital superintendents, dietitians, nurses, and diet aids were invited to these institutes which were co-sponsored by the Arkansas State Board of Health, the Arkansas Dietetic and Hospital Associations.

The first institute was held in Little Rock on therapeutic diets. This particular institute covered a period of four evenings, with each meeting divided into two 1-hr. discussions. For the first hour, a physician discussed a particular disease; during the second half of the meeting, a dietitian described the diet for that disease. The second institute was held in Fort Smith, covering hospitals in Northwestern Arkansas, and the third in El Dorado for the southeastern portion of the state. These meetings of one-half day each stressed meal planning, since this need was more critical for the majority of hospitals in these areas. Approximately thirty people attended each of the three institutes. The dietitian consultant visited hospitals in the area prior to the institute in order to stimulate interest in the program.

Films, which were shown at these meetings, as well as other visual aids greatly increased the effectiveness of the programs. At two of the institutes, the student nurses, with the help of the hospital dietitian, prepared demonstration tray set-ups. One local sanitarian spoke on sanitation in the hospital kitchen. Nutritionists from the Arkansas State Board of Health spoke on normal nutrition, using visual aids such as the "Basic 7" food groups and food value charts. Also, we encouraged local people to make many of the arrangements and appear on the program. In view of the requests for such institutes, it is our hope to have at least one yearly in each section of the state.

PREPARATION OF A DIET MANUAL

One of the major needs is for a simple and concise diet manual. Some food service supervisors have no diet manuals at all, and their only references are a few miscellaneous and often out-dated diets given them by various individuals. Thus you can readily understand why, in some hospitals, patients on soft diets are still being served puréed vegetables and no meat, why diabetic patients receive eggs on their trays every day both for breakfast and supper, why vegetables for low-fat diets are cooked

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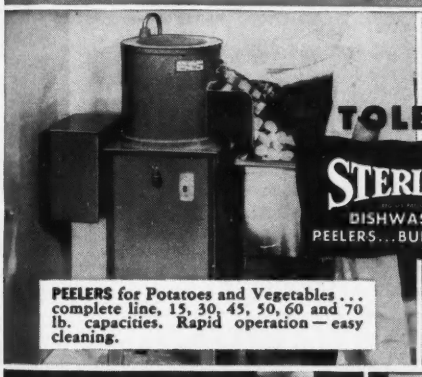

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for hours in the good old southern manner with salt pork or bacon drippings, or why regular diets do not include enough sources of calcium, protein, and ascorbic acid. Much of the dietitian consultant's time has been spent in writing an *Arkansas Diet Manual*, a draft copy of which is now nearing completion. This *Manual* will be co-sponsored by the Arkansas State Board of Health and the Arkansas Dietetic Association.

To insure better cooperation from the physicians and hospital superintendents, the diets to be used in the *Manual* were sent to each asking him to make suggestions and recommendations. The responses to these letters have been very encouraging. After the first draft is completed, it will be approved by the Arkansas Dietetic Association and a committee of the Arkansas Medical Association. The *Manual* will be printed by the Division of Hospitals, and a copy will be given to each physician and hospital in the state.

OTHER SERVICES

A monthly, two-page bulletin, "Your Patient's Tray," is being sent to each hospital dietitian and food service supervisor. This is a chatty bulletin, similar to Mississippi's "Your Patient's Food." It gives recipes, menus, and nutrition highlights. Sometimes considerable space is devoted to specific problems which we have found in several hospitals.

The Department of Agriculture's monthly list of "Plentiful Foods" is being sent to all food service supervisors who indicated that they would like to receive it. Other material has been developed to use during hospital visits; one of these is a simple list of menu planning suggestions which most food service supervisors can easily use.

There is a need for more dietitian consultants in the state, whether they be hired by groups of individual hospitals or by the State Board of Health. Each consultant would have a smaller area of the state and could visit regularly each hospital in her area at least every few weeks and would also be available for special advice whenever needed. We feel that this is probably the most practical solution for improving the dietary departments of many of our small hospitals which can neither afford nor justify employing the services of a full-time trained dietitian.

What to Expect from a Boss

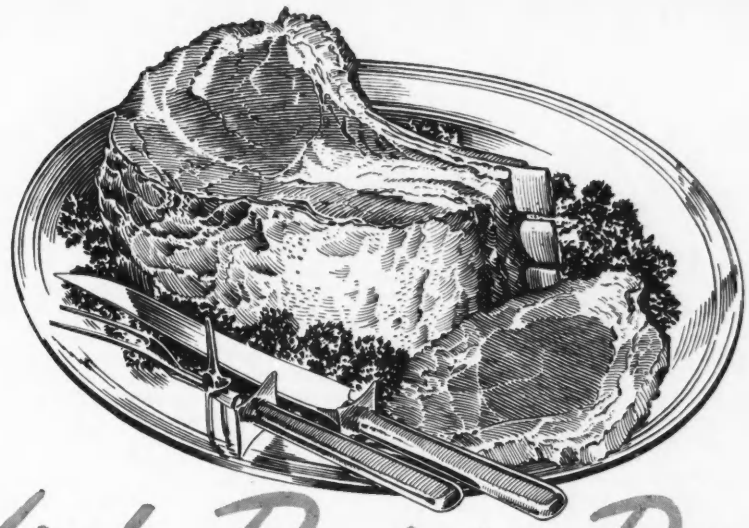
The March issue of *The Sooner Dietitian*, bulletin of the Oklahoma Dietetic Association, quotes from a speech made by H. B. Bentsen, Executive Director of the George W. Camp organization. In the course of his address Mr. Bentsen listed the things a food director had told him she thought she had a right to expect from her "boss." They are:

1. A clear definition of her position and her place in the organizational structure.
2. An explanation of the policies of the institution and particularly those related to her department, such as personnel, buying, catering, costs, profits, and so on.
3. An opportunity to have regular meetings with the business manager and other department heads for the purpose of discussing common problems and policy matters.
4. An opportunity to consult with administrative officers of the institution, building architects, and engineers when matters pertaining to food services are being considered, be they new construction, re-organization or rehabilitation of present facilities, replacement of old equipment, or anything else affecting her department.
5. To be consulted on budget matters affecting her department, such as food costs, salaries, replacement of equipment, overhead charges, inter-departmental charges, and other related items.
6. Constructive criticism when justified, but at the proper time and place—not in front of others or at times where discussion would be impossible.
7. A personal introduction to all the heads of other departments where cooperation would be essential.
8. Restraint from jumping at conclusions before getting facts.
9. Giving credit where and when due.
10. An opportunity for professional growth through attendance at professional meetings.
11. The right to select her own staff and to recommend salary increases when merited.
12. The right to defend members of her staff when they are under fire.

33rd Annual Meeting of A.D.A.

The nation's capital, Washington, D.C., will be the scene of the 33rd Annual Meeting of the American Dietetic Association to be held October 16 through 20, 1950. Joint headquarters for the convention will be held at the Hotel Statler and Mayflower Hotel. Daytime meetings and exhibits will be held at the National Guard Armory, while evening meetings will take place in the two headquarter hotels.

Early in June all members will receive information about recommended hotels and forms to be used in making reservations. Those planning to attend are requested not to make reservations prior to receiving this mailing, since the Greater National Capital Committee will not be in a position to take care of requests before that time.



High Protein Diet

GAINS NEW RECOGNITION

High-quality, complete protein—the kind so abundantly provided by meat—is now widely recognized as being essential for vigor and well-being for everybody, from childhood through old age.

High-quality protein is also important for protection against many infections, before and after surgery, during pregnancy and for growth in children. It is valuable, too, in the treatment of diseases of the liver, in peptic ulcer, in functional disorders of the nervous system and in many states of vague ill health.

These are the conclusions of some of America's most distinguished physicians whose findings were recently reported by the dean of American medical nutritionists, James S. McLester, M. D.* This article reviews many new practices, now generally accepted in the field of nutrition, which are almost a complete reversal of ideas held before the war. As McLester notes, "Protein has come into its own."

IN OBSTETRICS

In one of the most far-reaching statements of recent years, it is pointed out that the generous use of high quality protein by the pregnant woman favorably influences her condition and also that of her child at birth. (Such babies, according to studies made at Harvard, have a better chance of starting life in superior condition.)

IN HEALING OF WOUNDS

Referring to the new widespread practice of feeding generous amounts of protein to surgical patients, McLester cites studies indicating that "proteins are essential to wound healing . . . maintenance of tissue . . . and expeditious convalescence."

Reference is made to the radical change that has come in the treatment of most forms of Bright's disease. These patients, formerly restricted to low protein diets, now when given a greatly increased quantity of protein show "significant improvement." More rapid healing of peptic ulcer has been reported with increased protein intake. "Improvement follows in many other forms of illness when the physician induces his patient to eat more meat."

"MOST DRAMATIC ABOUT-FACE"

Declared "the most dramatic about-face . . . in the recent history of nutrition" is the feeding of patients with diseases of the liver. Modern day diets which include a large amount of protein are "accomplishing unexpectedly happy results . . . and give testimony to the high value placed on protein today."

THE PROTEIN OF MEAT

Meat is recognized as America's favorite protein food. It is one of our primary sources of protein —is often called "the yardstick of protein foods" because of its abundance of complete, high-quality protein. In addition, meat contributes significant amounts of B complex vitamins and important minerals.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

*McLester, J. S.: Protein Comes Into Its Own, J.A.M.A. *139*:897 (April 2) 1949.

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Book Reviews

The Second Forty Years. By Edward J. Stieglitz, M.D. 6th printing. Philadelphia: J. B. Lippincott Company, 1946. Cloth. Pp. 317. Price $3.95.

The Second Forty Years is an example of distinguished writing directed toward the lay reader. The physical changes of aging are presented clearly with emphasis on adjustments and preventive medicine. The greatest contribution of the book is that of a philosophy of aging in which the individual is first directed in the understanding of himself and then of his place in a society in which he will find an increasing number of aging individuals. The use of comparisons and vocabulary of modern technology give emphasis and add to the readability of the volume.

The chapter on nutrition in later years is probably one of the most superficial, not because of inadequacy of presentation but because most of our knowledge of the subject is presumptive, based on mortality statistics and observations on growth before twenty years. Thus the emphasis of the author is on weight control, a problem of importance in the later decades, but probably not the only one with nutritional significance.—*Margaret A. Ohlson, Ph.D., Head, Department of Foods and Nutrition, Michigan State College, East Lansing.*

Nutrition and Dietetics in Dental Health. By Ruth Hazel Roworth. Philadelphia: Offset Press, 1948. Paper. Pp. 260. Price $3.50.

Miss Roworth has gathered together the principles of nutrition and does so in a new textbook method. The book is written in outline form, which could be helpful in "putting over" nutrition in a limited time.

The book includes a great deal of elementary information which is stated in concise terms. For readers who wish to follow the subject of nutrition more thoroughly, this book would be more helpful if sources of information were given. For example, a source of the statement on page 67 would be interesting: "Since protein foods contain nitrogen, also found in explosives, they are unstable and perishable. Therefore, they need special care and usually refrigeration before use." Also, the source of Table 19 on page 96 would be helpful.

The book should be useful in oral hygiene classes because it is necessarily written in elementary form. It would present no challenge to dental students with their rich physical science background.—*Frances R. Godshall, Assistant Professor of Home Economics, Temple University, Philadelphia.*

A Recipe Primer. By Henrietta Fleck. Boston: D. C. Heath and Company, 1949. Paper. Pp. 220. Price $2.

Good cooking continues to be a great credit to the cook and a joy to the eater. We hear more and more about "my mother never taught me to cook" or "I'm convinced that good cooks are born." These are just excuses for poor cooking. Those schooled in exact chemistry, careful mathematics, accurate grammar, or any other academic specialty can quickly see the logic of the statement, "If you can read, you can cook."

Henrietta Fleck, Chairman, Department of Home Economics, New York University, obviously believes this is true. *A Recipe Primer*, written by Miss Fleck, is a marvel of simplicity, but never is it uninteresting.

The beginner will gain much from the brief historical and nutritional notes with which each chapter is opened. And in each recipe measures of ingredients and numbered steps of procedure are clearly listed. If every cook could prepare just the basic recipes, we'd be happier eaters.

Experienced cooks, too, will appreciate the many variations given after each recipe. For example, after biscuits come these variations: cheese, cinnamon, cinnamon rolls, coconut, drop, Graham, ham, honey, nut, onion, orange, parsley, peanut butter, pimiento, pinwheel, raisin, soybean, tomato juice, and shortcake. With each variation directions are given, as well as some serving ideas.

As a text, as a gift to a new cook or homemaker, or as a reference in your cookbook library, *A Recipe Primer* will be most valuable. While not the most glamorous cookbook ever printed, this volume is a treasury of good recipes; careful, easily-understood directions; and explanatory photographs. —*Virginia Monahan Bayles, University of Denver.*

Baker's Handbook. Prepared by U. S. Naval Supply Research and Development Facility, Naval Supply Depot, Bayonne, New Jersey, for the Bureau of Naval Personnel. Navpers 10284, Edition of 1948. Paper. Pp. 143. Apply Bureau of Naval Personnel, Washington, D. C.

Small enough to be easily handled, printed in large, clear type, and generously illustrated, this book is truly a handbook for developing skill in the making of bakery products. It is divided into four chapters followed by appendices of general information.

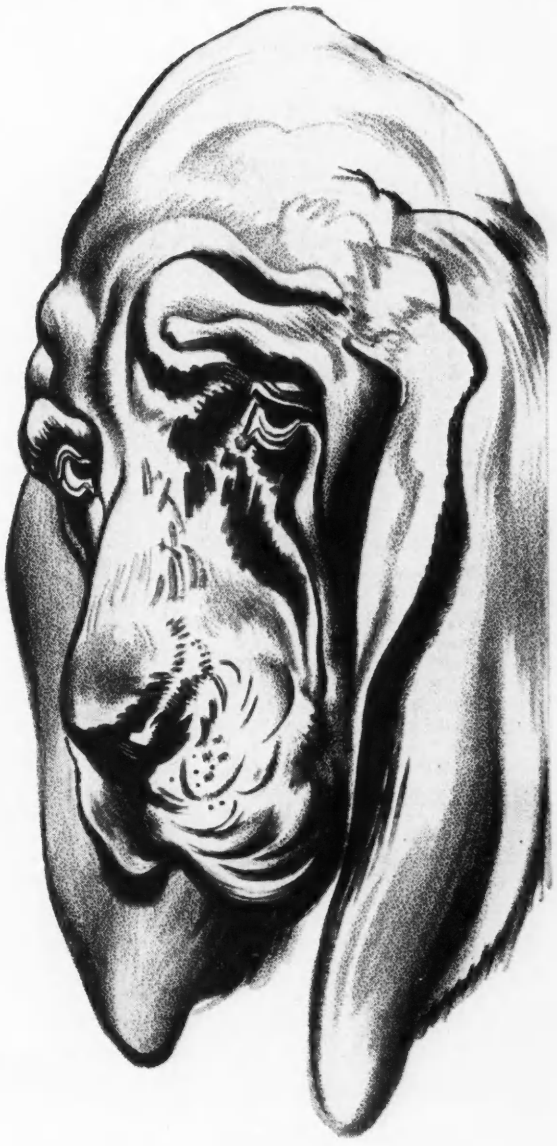
The first chapter is headed "Ingredients" and on the theory that "the ingredients in a bakery product largely determine its quality," each ingredient is discussed simply and concisely. Types of flour, of leavening agents, of eggs, and of fats are compared, and the classification and function of each ingredient are explained.

Chapter 2 deals with "Production." It has sixty-two excellent pen and ink drawings that illustrate steps in the making of bread, rolls, and pastry. These are well done and would be valuable in a training program. Especially helpful are the tables in this chapter which show "Faults and Their Causes" for each type of bakery product. The use of these tables would enable a student or an employee to score the finished product and to understand the cause of any failure.

Chapter 3 is made up of forty pages of formulas for basic recipes for: bread and rolls, cakes and cookies, frostings and fillings, and pastry. Each basic formula is accompanied by a list of possible variations. The plain muffin formula, for example, has thirteen variations and the plain cake, fourteen variations.

Chapter 4 contains a brief description of some of the more common pieces of equipment needed, and the appendices consist of seventeen tables which give weights and measures, cooking and baking temperatures, and other helpful information.

Designed for training naval personnel in preparing bakery products, this book would be useful in any employee or student training program. It is also an excellent reference book.—*Ruth Dillon Heckler, Director of Public School Food Service, Oklahoma City.*



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"Queenie" gave birth to fourteen hungry "baby sleuths"—nine too many for her to service.

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Of course with her pups saved, "Queenie" had a right to be glad-eyed. As a matter of fact, her pups got milk just as good as she could give them, herself.

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Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Hermia M. Handt and Janet Engebretsen, Veterans Administration Hospital, Hines, Illinois; Mildred Bonnell and administrative interns, University of Washington, Seattle; Quindara Oliver Dodge, Women's Educational and Industrial Union, Boston; and the Journal Staff.

AMERICAN JOURNAL OF DIGESTIVE DISEASE

Vol. 17, January, 1950

* Problems in the intravenous administration of synthetic and natural fats for nutritional purposes. H. H. Leveen, G. Pappe, M. Restuccia, and J. H. Mulholland.—p. 20.

Intravenous Fat. Due to the high interfacial tension between water and natural fat, it has not yet been possible to produce stable emulsions of these substances by mechanical means. It was found that the addition of emulsifying agents which lower surface tension make possible the formation of stable emulsions. These emulsifying agents were found to be toxic and hemolytic in dogs in direct proportion to their surface-tension-lowering power. Surface active substances render the capillaries more permeable as demonstrated with T-1824 dye, and account for pulmonary edema and death from shock after intravenous administration. The droplet size is the limiting factor in emulsion stability both *in vitro* and *in vivo*. Electrolytes and globulins tend to break most emulsions while albumin tends to stabilize them. Stability *in vitro* does not imply that the emulsions will remain stable on introduction into the circulating blood.

THE AMERICAN JOURNAL OF NURSING

Vol. 50, February, 1950

* The Jewish faith. Rabbi H. A. Schorr.—p. 64.

The Jewish Dietary Laws. Traditional dietary regulations for ritualistically observant Jews permit the eating of flesh of only ruminant animals with divided hoofs, and fowl that are not birds of prey. Such animals and fowl must be slaughtered, dressed, and prepared in a prescribed manner. Dairy products, fats, oils, and shortenings must be derived from the animals mentioned or from plants. Milk and butter may not be eaten with or immediately after meat. Fish that have both scales and fins may be eaten with dairy products, if prepared with non-meat shortening. Utensils used for preparing and serving non-kosher food may not be used for kosher food unless cleansed in a prescribed manner. If failure to follow a prescribed therapeutic diet would endanger a patient's life, the physician's orders prevail and the patient is obligated by Jewish law to eat the foods ordered, although they may not be kosher. Because the dietary laws are important to the observant Jew, it is wise, wherever possible, to supply such a patient with appropriate substitutions.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 160, February, 1950

* Relation of glomerular filtration rate and sodium tubular rejection fraction to renal sodium excretion. D. M. Green, W. C. Bridges, A. D. Johnson, J. H. Lehman, F. Gray, and L. Field.—p. 306.

Mechanism of Sodium Excretion. The mechanism of sodium excretion was studied in sixty subjects, selected to provide a representative cross-section of filtration rates. Dietary sodium intake was sufficiently varied to insure a wide range of sodium excretion rates. The objective of the study was not to determine why one subject excreted more sodium than another, but to ascertain whether the observed difference in output could be primarily explained by differences in glomerular filtration rate or by variances in tubular reabsorption. A high correlation was found between the rate of sodium excretion and the magnitude of the tubular ejection fraction. Ten- to fifty-fold variation in sodium output was observed at nearly identical rates of filtration.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 40, February, 1950

* Chemicals introduced in the processing of foods. F. C. Bing.—p. 156.

Chemicals in Food. In the processing of food, man has made use of available technological aids to help in preservation and to enhance flavor. In recent years new chemicals have been used by manufacturers, and in many instances it is questionable whether existing knowledge of metabolic processes of nutrition is sufficiently extensive to warrant scientific approval of some of these ingredients. The Food, Drug and Cosmetic Act affords considerable protection to manufacturers as well as to the public but is insufficient protection in cases of products for which definitions and standards of identity have not been promulgated. This law should be amended to require the same unbiased consideration and approval prior to the use of new substances intended for foods as the present law now extends to new drugs.

ANNALS OF INTERNAL MEDICINE

Vol. 32, January, 1950

* The use of isotopes as metabolic tracers. D. Stetten, Jr.—p. 1.

Vol. 32, February, 1950

* The effect of endogenous insulin on gastric function: a clinical study. W. D. Poe.—p. 279.

Use of Isotopes. The tracer technique in determining metabolic reactions involves the "labelling" of a molecule so that it is recognizable by the experimenter. This method has been utilized to establish the mode of degradation of fatty acids. Metabolic problems lending themselves to study with isotope tracers are the study of anatomical distribution of a substance; study of biologic precursors and derivatives; and study of normal functions under controlled conditions

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Simmer about 4 lbs. cut rhubarb till tender in syrup of 1 lb. sugar and 2½ cups water. Drain. Add hot water to syrup to make 2½ qts. In this dissolve 16 oz. Strawberry Jell-O. Add rhubarb and chill in sherbets. Looks, tastes delicious! And costs only about . . .
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Any slight difference in initial cost is negligible when you compare it with your gain in customer acceptance . . . quality . . . and volume!

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and under various circumstances. It is clear that the use of isotopes should be a valuable adjuvant in research in intermediary metabolism.

Insulin Effect on Gastric Function. In a random selection of fifty patients having hyperinsulinism, 62 per cent had digestive symptoms severe enough to cause them to seek medical care. Case histories revealed an additional 18 per cent had minor digestive upsets. It was concluded that hypoglycemia was frequently associated with increased motor activity of the stomach. Through its effect on the vagal apparatus, carbohydrate plays an important role in gastric function.

ARCHIVES OF INTERNAL MEDICINE

Vol. 85, January, 1950

* Use of lithium salts as a substitute for sodium chloride. J. H. Talbot.—p. 1.

Lithium Salts. Extensive research was carried on over many years prior to the time lithium salts were placed on the market as a salt substitute. The search for a satisfactory substance was limited to specific requirements: the substitute should be non-toxic, palatable when added to warm food, and taste similar to sodium chloride. An aqueous solution of lithium chloride was the only product meeting all specifications. Experiments at Buffalo General Hospital resulted in enthusiastic acceptance of lithium; patients on low-sodium diets began to gain weight and consumed a normal amount of food, Near the conclusion of the trials, a death attributed to lithium poisoning was reported in newspapers throughout the country. The Food and Drug Administration ordered withdrawal of lithium salts from the open market. To hundreds of patients using lithium chloride the news was a blow. Further investigation of the deaths revealed that there were other causes for death which had not been reported originally.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 62, February, 1950

* Recent advances in obstetrics. H. B. VanWyck.—p. 109.

Recent Advances in Obstetrics. The routine control of diet during pregnancy has become very important. Although there is much controversy among experts, there is no doubt even in the minds of the most skeptical that a good diet favors a successful pregnancy. It should also not be forgotten that poor reproductive function in adulthood may be due to malnutrition even in infancy. The nutritional allowances for the pregnant and lactating woman are given either as a range or as an average. One must not forget that each patient presents an individual problem, and this principle applies especially to the total caloric intake. The total overall weight gain and rate of gain must be controlled. Nutritional recommendations are included.

ENDOCRINOLOGY

Vol. 46, December, 1949

The development of a refractory state to adrenocorticotrophic hormone. G. L. Gordon.—p. 571.

Vol. 46, January, 1950

* Action of insulin on deposition of glycogen and storage of fat in adipose tissue. A. E. Renold, A. Marble, and D. W. Fawcett.—p. 55.

Insulin and Adipose Tissue. Rats were used to investigate metabolic effects of insulin on adipose tissue. A large dose of crystalline or protamine zinc insulin promoted greater deposition of glycogen in fat cells in diabetic rats than in normal animals, and more glycogen deposited at the site of injection than elsewhere. Insulin-injected adipose tissue showed hypertrophy, perhaps due to the synthesis of fat promoted by carbohydrate in the fat cell itself. The atrophic lipodystrophy of diabetic patients could not be reproduced in the rat and remains unexplained.

GASTROENTEROLOGY

Vol. 14, January, 1950

* Radioactive phosphorus as an indicator of the rate of phospholipid formation in patients with liver disease. D. Cayer and W. E. Cornatzer —p. 1.
* Electrophoretic studies in liver disease. H. A. Rafsky, M. Weingarten, C. I. Kruger, K. G. Stern, and B. Newman.—p. 29.
* Fat absorption in young and old age. G. H. Becker, J. Meyer, and H. Necheles.—p. 80.

Radioactive Phosphorus and Liver Disease. Eleven patients with advanced portal cirrhosis, and ten control subjects were studied to determine efficacy of treatment with methionine and choline in the formation of phospholipids in the liver. Injection of radioactive phosphorus was followed by determination of radioactivity of phosphorus in plasma lipids. Definite increase in phospholipid turnover following a large dose of choline or methionine may indicate fatty infiltration of the liver and may indicate need for treatment with lipotropic substances.

Electrophoretic Studies in Liver Disease. Tests of liver function and chemical and electrophoretic analyses of serum proteins of forty patients with liver disease were performed. Electrophoretic analysis may show altered protein metabolism in acute and chronic liver disease not revealed by chemical methods.

Fat Absorption in the Young and Aged. Thirty young and thirty old persons were subjects. All received a standard fat meal, followed by a 12-hr. fast. Subsequent tests showed a decrease in the rate of fat absorption in aged individuals and supported the theory that fat may be absorbed in the unhydrolyzed states.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 182, February, 1950

* The amino acid requirements of man. I. The role of valine and methionine. W. C. Rose, J. E. Johnson, and W. J. Haines.—p. 541.

Amino Acid Requirements of Man. The investigation of the amino acid requirement of human subjects and the composition of a basal diet suitable for this purpose are described. Adult male subjects received a diet in which 95 per cent of the total nitrogen was furnished by a mixture of the ten amino acids previously found to be essential for the rat. Nitrogen equilibrium was established promptly, or a slight positive balance was manifested, provided the caloric intake also was adequate. This demonstrated that the ten amino acids were necessary for the maintenance of nitrogen equilibrium in human adults. The removal of either valine or methionine without altering the total nitrogen intake, induced a pronounced negative balance which was relieved by the return to the diet of the missing amino acid. Thus, convincing proof is provided that valine and methionine are indispensable components of the diet of man.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 29, February, 1950

* Serum vitamin A and total plasma lipid concentrations as influenced by the oral administration of vitamin A to children with the nephrotic syndrome. B. M. Kagan, E. M. Thomas, D. A. Jordan, and A. F. Abt.—p. 141.
* Pyridoxine deficiency in human beings induced with desoxypyridoxine. J. F. Mueller and R. W. Wilter.—p. 193.
* Tissue protein studies in normal and undernourished males. The changes in total circulating protein after an intravenous saline infusion as an index of protein stores. J. E. Harroun, C. J. Smyth, and S. Levey.—p. 212.

Effects and fate of human serum albumin administered intravenously and orally to premature infants. C. A. Smith, K. G. Phillips, and R. O. Roth.—p. 218.

Delicious, delightful Le Goût Gelatin Desserts

What a lilt these lively-flavored new Le Gout Gelatin Desserts add to meals! Each one . . . Strawberry, Raspberry, Cherry, Orange, Lemon, Lime . . . is so delicious to the taste, so delightful to look at, that it makes a marvelous dessert in itself. And each is of such fine flavor, uniformity and true clarity that it harmonizes beautifully with whatever fruits you may wish to add to make luscious desserts and salads. One taste will tell you that here is real flavor treasure . . . and your customers will be quick to agree! Ask the Le Gout Man or your jobber for a demonstration.

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Vitamin A in the Nephrotic Syndrome. This study demonstrated that there is an abnormality in the vitamin A metabolism in children with nephrotic syndrome. Although higher vitamin A concentrations were observed in patients with higher total plasma lipid concentrations, no quantitative relationship was demonstrated. Higher serum vitamin A levels were found in nephrotic patients following a test dose of vitamin A in alcohol in aqueous dispersion than following a test dose of vitamin A ester in oil. The highest concentrations of serum vitamin A were observed 6 hr. after administration. At 6 hr., the levels were two to ten times as high as the highest level noted in normal children at the same time interval. The concentrations remained elevated for 24 to 48 hr. The most likely cause for these differences is that the liver in the nephrotic syndrome fails to utilize or store vitamin A as rapidly as it does under normal circumstances.

Pyridoxine Deficiency Induced with Desoxypyridoxine. Desoxypyridoxine, an analogue and metabolic antagonist of pyridoxine, was given intramuscularly in doses of 60 to 150 mg. to eight patients on a B-complex-poor diet. Seborrhea-like skin lesions developed about the eyes, nose, and mouth after two to three weeks. Erosions appeared in and about the mouth resembling cheilosis of riboflavin deficiency. Glossitis and stomatitis similar morphologically to the lesions of niacin deficiency were noted in about half of the patients. One patient developed severe systemic symptoms: nausea, vomiting, weakness, and dizziness. The skin, mucous membrane, and systemic manifestations were unchanged when a mixture containing thiamine, riboflavin, and niacin was given, but disappeared within 48 to 72 hr. after pyridoxine was administered. The similarity of the oral lesions to those frequently found in niacin and riboflavin deficiency bespeaks a close relationship between pyridoxine, niacin, and riboflavin. The authors believe that these lesions constitute at least part of the human syndrome of acute pyridoxine deficiency.

Tissue Protein in Normal and Undernourished Males. Nine undernourished subjects were chosen on the basis of definite weight loss, a history of inadequate food intake, signs of vitamin deficiencies, and a low serum protein value. The six normal subjects used in the study manifested none of the above signs and had had no recent illness. Changes in plasma volume, total circulating protein, albumin, and globulin, following the 1000-cc. intravenous saline infusion, were determined. The response to the saline infusion demonstrated by the normal subjects was characterized by an increase in plasma volume, an average of 440.7 cc., and a decrease in total circulating protein, an average of 13.9 gm. The response to the saline infusion demonstrated by the undernourished subjects was characterized by an increase in plasma volume, an average of 169.9 cc., and a decrease in total circulating protein, an average of 14.7 gm.

THE LANCET

Vol. 1, January, 1950

* The early yield of human milk, and its relation to the security of lactation. H. Walter.—p. 53.

Lactation in Human Beings. The early yield of milk in 400 lactating women was measured at the fifth and tenth days after delivery. The figures varied considerably both in yield and amount taken by the infant. Of the 400 women, 78 per cent were producing enough milk at the tenth day to provide sufficiently for a baby weighing 9 lb. at birth. Failure to maintain an adequate yield is a more usual cause of artificial feeding than failure to secrete enough at the start of lactation. It is suggested that insufficient emptying of the breasts in the early days after delivery is a common reason for rapid decline in yield and may lead to early suppression of milk supply.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 242, February 16, 1950

* Diabetes. W. R. Ohler.—p. 245.
* Vitamin B excretion studies in patients with rheumatoid arthritis. T. B Bayles, R. J. Palmer, N. F. Massod, and E. H. Judd.—p. 249.

Diabetes. The objective treatment of diabetes is to maintain weight and strength, to keep the diabetic patient at work, and to avoid complications. This can be accomplished by a diet sufficient for the patients' needs—a diet adjusted to add weight or to reduce weight as the situation requires, liberal in carbohydrate, fairly liberal in protein, and rather low in fat. In general, the diabetic diet does not differ greatly from the average diet. Most patients receive at least 150 gm. carbohydrate, and many receive as high as 300 gm. The fat is definitely reduced—80 to 150 gm.—and the protein should be rather high—100 to 150 gm. Sufficient insulin should be given to keep the diabetes in as good control as possible, the physician always remembering that insulin reactions are to be avoided.

B-Complex Excretion in Rheumatoid Arthritis. Two groups of patients with rheumatoid arthritis and one group of controls were studied. The first group of twenty-six patients had repeated fasting and load measurements during a forty-day period of standardization; the second group had a two-week period of standardization. The first group was placed for thirty days on a vitamin supplement of one capsule per day containing 2 mg. thiamine, 2 mg. riboflavin, 20 mg. niacin, 0.5 mg. pyridoxine, 1.0 mg. calcium pantothenate, 5000 I.U. vitamin A, 45 mg. ascorbic acid, and 500 I.U. vitamin D. Load and fasting tests were done. There were no controls for this group. Group two had one vitamin capsule per day for ten days, and tests were done at the end of this period. The influence of previous diet was minimized since all patients were on the hospital diet for at least three weeks before being tested. It is concluded that arthritic patients on a normal hospital diet showed excretion levels of thiamine, riboflavin, and niacin above the established deficiency levels and closely resembling the excretions of normal controls. When supplementary doses of B-complex were given, there was no essential difference between the excretion levels of the patients and the controls.

THE SCIENTIFIC MONTHLY

Vol. 70, February, 1950

* World soybean production in 1948. M. I. Fletcher.—p. 116.

World Soybean Production in 1948. Interest in soybean products—oil and meal—spread rapidly in the Western Hemisphere after World War I. Little progress has been made in commercial production except in the U. S. and Canada. World War II brought further changes in commodities, markets, and interest. Soybeans now supply a little less than half the vegetable oil and 60 per cent of the vegetable proteins produced in the U. S. The further development of commercial production is receiving impetus in countries where edible oils and proteins are scarce, as France and Britain. Recovery and development of the soybean industry is vital to overall European recovery.

SOUTHERN MEDICAL JOURNAL

Vol. 43, March, 1950

* Antianemic properties of a reaction product of vitamin B_{12} and the intrinsic factor. T. D. Spies, G. G. Lopez, F. Milanes, R. L. Toca, and A. Reboredo.—p. 206.

Reaction Product of Vitamin B_{12}. Four patients with macrocytic anemia in relapse were arbritrarily selected for study. Each was given one capsule of the reaction product of 9 mcg. vitamin B_{12} and the intrinsic factor present in 0.33 gm. of a concentrate from hog duodenum, daily for ten days.

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Each patient showed some clinical and hematologic improvement. None had maximum response in ten days. This indicated that larger dosage is necessary if the test period is to be so short. This study suggests that a practical method of oral therapy characterized by the administration of a single capsule is at hand.

SURGERY, GYNECOLOGY AND OBSTETRICS

Vol. 90, February, 1950

* Parenteral nutrition with human serum albumin as the source of protein in the early postoperative period. A. G. Fletcher, Jr., N. S. Gimbel, and G. Riegel.—p. 151.
* The chloride output rate of the human stomach in healthy subjects and ulcer patients—the effects of vagotomy and acetylcholine. J. R. Brooks, J. M. Erskine, T. Gephart, O. Swaim, and F. D. Moore.—p. 155.

Protein in the Post-Operative Period. With a daily intake of 0.2 gm. nitrogen per kilogram plus sufficient glucose by vein to provide a total of 25 calories per kilogram, eight patients were in positive nitrogen balance and three in equilibrium. The eleven patients were given serum albumin intravenously as the sole source of nitrogen during the first five post-operative days. For the 70-kg. man, the protein intake was approximately 84 gm. and the caloric intake 1750.

Chloride Output of Human Stomach. The chloride output and the rate of secretion seem to be more significant in diagnosing peptic ulcer than concentration factors (chloride concentration, free and total acid, and *p*H). The chloride output for the twenty-nine patients with duodenal ulcer studied here was almost double that for thirty-seven normal adults; and twenty-three patients who had undergone vagotomy secreted less than the normal. The evacuation rate through the pylorus was approximately 6.0 cc. per minute for both the normal subjects and the ulcer subjects. In the ulcer patient, following vagotomy, the rate dropped to 3.5 cc. per minute. Regurgitation back into the stomach was more common in vagotomized ulcer patients than in normal individuals or ulcer patients. The effects of local application of acetylcholine to the stomach were statiscally no different for normal individuals, ulcer patients, or vagotomized ulcer patients.

BUILDINGS

Vol. 50, February, 1950

* Waxing soft floors.—p. 38.

Waxing Soft Floors. An acceptable, standard procedure for waxing soft floors has been developed which lessens maintenance time and prevents unnecessary use of materials. The waxing can be broken down into five steps: (a) preparation, including movement of waxing equipment and material to and from area, the assembling and cleaning of equipment before and after use, and the removal and replacement of furniture and equipment afterwards; (b) application of first coat; (c) buffing first coat; (d) application of second coat; and (e) buffing the second coat. A series of nine studies reveals that the time required for the preparation phase varied considerably, while time required for the remaining steps in the operation were quite consistent, ranging from 0.36 to 0.69 manhours per 1000 sq. ft. for one operation. The article lists the quality of materials and equipment needed and then illustrates and describes in detail the proper procedures.

COLLEGE & UNIVERSITY BUSINESS

Vol. 8, February, 1950

* Cafeteria operation at a small university serves 1500 meals a day. L. R. Haynie.—p. 36.
* Meat casseroles to please the palate. R. Staggs.—p. 38.

College Cafeterias. To operate a small university cafeteria within an approved budget, it is necessary frequently to reexamine purchasing practices from the viewpoint of labor costs. For example, it was found more economical to buy precut meat rather than carcasses. The purchase of a food shaping machine insures portion control and saves time and labor. Realizing that proper equipment is important in lowering labor costs, installation of a conveyer for returning soiled dishes to the dishwashing machine can bring about lowering of food costs. The food service industry, being especially vulnerable to employee attitudes, profits from morale building programs and shorter work weeks. Other important points include recognition of the need for a wider appreciation of the importance of college food service, more warmth and hospitality in dining rooms, a uniform classification for comparison of food dollars, and recognition of the need for improvement in relations with students, faculty, employees, and the general public.

Meat Casseroles. Meat casseroles continue to rate high in popularity, both by those who prepare them and by consumers. Although many of the ingredients can be prepared ahead of time, it must be kept in mind that advance preparation may have a bad effect upon the nutritive value and keeping quality of some foods. In these one-dish meals fewer utensils are required for preparation and keeping a meal hot is limited to one dish instead of several. Although foods for the casserole may be wisely chosen for color, flavor, and texture and prepared properly, it is often the extra touch that popularizes the dish. For instance, varied shapes of biscuits, chopped parsley, pimiento or cheese in the biscuit dough, and garnishes of parsley or potatoes greatly enhance their eye appeal. Combinations of sliced, ground, whole, or chopped meats, vegetables, and fruits are a challenge to the imagination which knows no bounds.

FOOD INDUSTRIES

Vol. 22, February, 1950

* Stored apples.—p. 64.
* They welcome new ideas—at a profit.—p. 78.

Stored Apples. Shredded oiled paper used in storage containers for apples greatly reduces development of blue mold and scald. Blue mold develops on apples which have been bruised by rough handling, rubbing within the crate, improper grading, or other pressures against the fruit. Packing in oiled paper also absorbs gases favoring scald and, thus, greatly reduces its development.

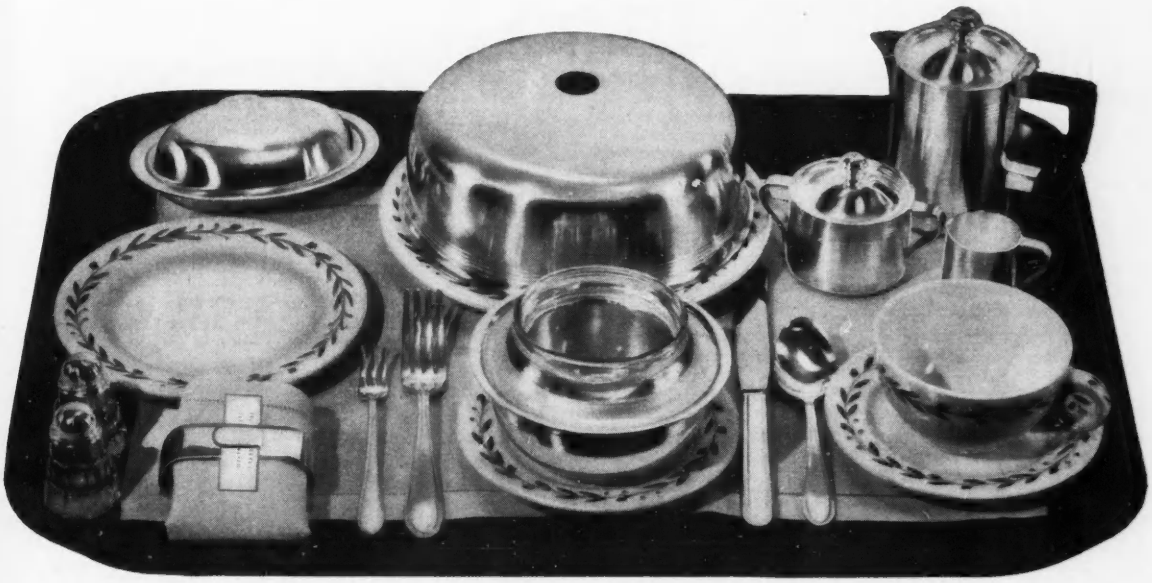
Improvement in Boiled Hams. New cooking methods have produced better flavor and more uniform quality in hams. An electronic precision indicator measures internal temperature of the hams, and temperature of cooking water is maintained by the use of an automatic recorder-controller. Thus, the ham is cooked until just done while natural juices, flavor, and texture are retained. This new technique is said to reduce the trouble heretofore existing in boiled ham production.

HOSPITALS

Vol. 24, March, 1950

* A system for training employees in the dietary department. P. E. Hart.—p. 99.

Training Dietary Employees. Employee training programs have not always accomplished what was hoped because the incorrect approach to the problem is used. Too often most of the program has been directed to the employee



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and not enough emphasis placed on correct training of department heads and other supervisory people. A department or unit fails to function properly when lines of authority are not clearly defined or respected, when the organization is not functioning properly, when there is lack of understanding of supervisory technique, and when responsibilities are not fixed. Four basic principles of good organization and four operating fundamentals of a successful training program are discussed. The importance of good supervision cannot be overestimated. The following questions were asked about the supervisor's ability: (a) Does she have the technical knowledge necessary? (b) Are appropriate methods used? (c) Does she possess qualities of leadership? (d) Does she know how to train her subordinates? Reevaluation of many training programs may lead to more emphasis on the quality of supervision.

INSTITUTIONS MAGAZINE

Vol. 26, February, 1950

* Host of ways to conserve on fuel needed for cooking.—p. 2.

Vol. 26, February, 1950

* Look for best ways to cook frozen meat.—p. 3.

Conserving Cooking Fuel. Helpful pointers are given on methods for conserving cooking fuel. Suggestions include: concentration of pots on one range for better use of available fuel, elimination of pots and pans with dented bottoms, care in use of thermostat, and use of lower temperatures in holding food. Advice against long periods of preheating for ranges and ovens is also given. Instructions for cleaning and care of various parts of a range are included.

Cooking Frozen Meat. An extensive study of defrosting and cooking frozen meats was made at Iowa State College. Veal, beef, lamb, and pork were used. An attempt was made to determine defrosting times by different methods, the amount of fuel required for cooking, and a comparison of palatability of roasts defrosted by different methods. Temperature and the size of a roast were the most influential factors in defrosting time. Weight loss was about the same in all methods with the exception of some roasts defrosted in water. These gained weight. Defrosting prior to cooking resulted in greater weight loss and thus less edible meat. Palatability was appreciably affected by: manner of defrosting, oven temperature and type of fuel, and the amount of time the roast was held in frozen storage.

THE MANAGEMENT REVIEW

Vol. 39, February, 1950

* Conditioning employees for incentives. R. F. Kent.—p. 66.

Incentives for Employees. The following procedures have been found helpful in giving employees incentive: (a) Make certain that there is a sufficient supply of work ahead. (b) Carefully check the operators' skill and adaptability. If he is interested but lacks skill, train him; if he is interested, but not adapted, change him; if he is not interested or unable to acquire knack, move him to another job or replace him. (c) Definitely establish tools, equipment, and methods. (d) Instruct him in proper methods. (e) Take steps to insure that operating conditions on which standards are based are maintained.

THE NATION'S SCHOOLS

Vol. 45, February, 1950

Philosophy of a school lunch program. M. Prentice.—p. 72.

Vol. 45, March, 1950

* Needed research on the school lunch. E. N. Todhunter.—p. 80.

School Lunch Research. Carefully planned research is needed in school lunch work as pointed out by examples in this article. Many problems that may be studied are: methods of arousing the interest and cooperation of administrators and teachers; functioning of the school lunch in the education of the child; persuading the child to spend his money for wholesome foods rather than for candy and soft drinks; getting the child to eat food served to him; stressing nutritional adequacy of school lunches; determining the essential equipment for the school cafeteria; and training personnel in the execution of sounder school lunch service. Research is definitely needed if progress is to be made along sound lines in school lunch work. Although dietitians, psychologists, educators, and other personnel can conduct these investigations, it will be left mainly to the school lunch people to assume the responsibility for stating their problems and for gaining the interest and support of appropriately trained specialists.

PERSONNEL JOURNAL

Vol. 28, February, 1950

* What do your workers think? D. A. Laird.—p. 319.
* Audio-visual aids in industrial training. L. W. Lerda.—p. 329.
* The dynamics of industrial supervision. N. Cantor.—p. 336.

Incentive management.—p. 341.

Employee Relations. Many businesses are systematically discovering employer faults and using the findings to improve employee relations. Of all the risks inherent in business, the worker—what workers have on their minds and what they want from bosses and jobs—is the biggest and the most difficult to understand. There must be a definite plan in the attempt to uncover some of the feelings and sore-points of employees; it is very unreliable to depend on the grapevine or occasional open complaints to measure the true extent of unrest and discontent. One way to learn about employees' dissatisfactions is to work with them as a worker for a long period. Another is to effect some type of survey that not only gives much needed information but also serves to relieve and satisfy employees through expression of opinions and attitudes.

Audio-Visual Aids. Through audio-visual aids employee training may be enhanced. Advantages of the use of such aids include the following: interest is increased 40 per cent; range of understanding is increased 25 per cent; time for completing instruction courses is reduced 25 per cent; retention of information for one year is increased 35 per cent. When direct, actual experience cannot be provided, audio-visual aids become especially useful. Pictures create a "sense" experience; provide a feeling of newness and freshness of material; develop emotional appeal; and combine new, past, and meaningful experiences. There should be continuous evaluation of aids. They should be retained only so long as they are effective.

Industrial Supervision. Research, especially by the social scientists in schools of business administration, has illuminated what the demands of workers are. People who work together expect not only income but also status, prestige, and deference. The supervisor represents the company to the worker, and upon the supervisor employee morale hinges. Supervisors must be helped to acquire insight into their own attitudes and behavior so that they understand employee motives and desires. This self-understanding may be developed through: group discussions and slide-films or moving pictures accompanied by narratives dealing with such topics as human relations in industry, the employees' needs, the nature of employee complaints, skills in helping the employer, the duties and responsibilities of foremen, and industry as a social system. Unless supervisors appreciate the feelings and needs of the employees, they cannot perform their function successfully.

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News Notes

American Board of Nutrition. A certifying board, the American Board of Nutrition, has been formed by persons and organizations interested in the practice of the science of nutrition to establish standards of qualification of persons as specialists in human nutrition and to certify as such those persons who comply with the standards. Those concerned with the establishment of the Board included representatives from the American Institute of Nutrition, American Medical Association, American Public Health Association, American Society of Biological Chemists, Inc., and Association of American Medical Colleges. Present members of the Board are Otto A. Bessey, C. A. Elvehjem, Wendell H. Griffith, C. G. King, L. A. Maynard, Fredrick J. Stare, and John B. Youmans. Requirements for admission to examination and certification are as follows: (a) citizenship in the U. S. or Canada; (b) presentation of evidence of satisfactory moral and ethical standing; (c) Ph.D. in a biologic science or M.D. degree from an approved school; (d) courses or training equivalent to a minimum of 3 semester hr. in at least three of the following five subjects: food technology, microbiology of food, human physiology, large-scale food preparation, and hospital dietetics; and (e) three years' experience in the practical aspects of human nutrition. Qualified candidates will be considered for certification without examination until June 30, 1951.

Application forms and further information may be obtained from the Secretary-Treasurer, Dr. Otto A. Bessey, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12.

Canadian Memorial Fund. A memorial fund campaign to honor the late Misses Violet Ryley and Kathleen Jeffs has been approved by the Canadian Dietetic Association, and a goal of $25,000 has been set. Purpose of the joint memorial will be to sponsor an annual lecture at the Canadian Dietetic Association Convention. Members of A.D.A. are invited to contribute. Miss Ryley was a charter member of the American Dietetic Association, and both were charter members of the Canadian Dietetic Association.

Summer Courses. *Iowa State College*, Ames, will offer two courses in foods and nutrition for college teachers in the 1950 summer school. A "Short Course in Foods" will be concerned with current research. It will be given June 29 through July 19. Emphasis will be on food processing, such as canning, cooking, freezing, and preparation, and/or food research techniques. Five visiting nutritionists will serve as lecturers. The second course will be an "Evaluation Workshop," and will deal with the selection, construction, use, and interpretation of evaluation devices in foods and nutrition. It is scheduled from July 20 to August 9. Each course carries 3 college credits.

Three summer workshops will be held at *Michigan State College*, East Lansing, for advanced credit in foods and nutrition and organization and management. They will cover: "Organization and Management"; "Advanced Nutrition"; and "Demonstrations in Foods and Nutrition." Three hours' credit will be given for each course.

Garvan Medal to Dr. Mack. Dr. Pauline Beery Mack, Director, Ellen H. Richards Institute, Pennsylvania State College, received the Francis P. Garvan Medal in April at the meeting of the American Chemical Society in Detroit. The medal honoring women in chemistry was presented to Dr. Mack for her work on the calcium chemistry of bone density.

Marjorie Sims. Word has reached the A.D.A. office of the death on April 3 of Marjorie Sims, Associate Professor of Home Economics, Drexel Institute of Technology, Philadelphia. Miss Sims has been an A.D.A. member since 1945, and at the time of her death was Secretary of the Pennsylvania Dietetic Association. She had also served as President of the Philadelphia Dietetic Association.

Posters and Leaflets on Prenatal Diet. Sets of six colorful posters and six leaflets on prenatal dietary needs have recently been published by Health Publications Institute, Inc., 216 North Dawson Street, Raleigh, North Carolina.

The posters have been designed for use in such places as health agencies, and the leaflets can be distributed directly to pregnant women. Topics covered are: body building foods, green leafy and yellow vegetables, milk, foods rich in ascorbic acid, fish liver oil, and the necessity of watching weight gain. The covers of the leaflets are reproductions of the posters, while the inside copy explains briefly the topic on the cover. Prices are:

Posters: 5¢ each, $3.00 per 100, $25 per 1000. Series of six: 25¢ per set, $15.00 per 100 sets, $125.00 per 1000 sets.

Leaflets: 5¢ each, $1.50 per 100, $10.00 per 1000. Series of six: 25¢ per set, $7.50 per 100 sets, $50.00 per 1000 sets.

Dietitian Commissioned in U.S.A.F. Jean K. Trainum of Illmo, Missouri, was recently commissioned a First Lieutenant in the Women's Medical Specialist Corps of the U. S. Air Force Medical Service.

Plentiful Foods. The U.S.D.A. Production and Marketing Administration has released the following list of foods expected to be plentiful in May:

Vegetables and fruits

Beans, canned Lima	Onions
Cabbage	Peaches, canned
Carrots	Potatoes, Irish
Corn, canned	Prunes
Lettuce	Raisins
	Tomatoes

Protein foods

Beans, dry	Eggs
Chickens—broilers, fryers, and hens	Fish, fresh or frozen
Dairy products, manufactured	Peanut butter
	Pears, dry
	Pork and pork products

Other foods

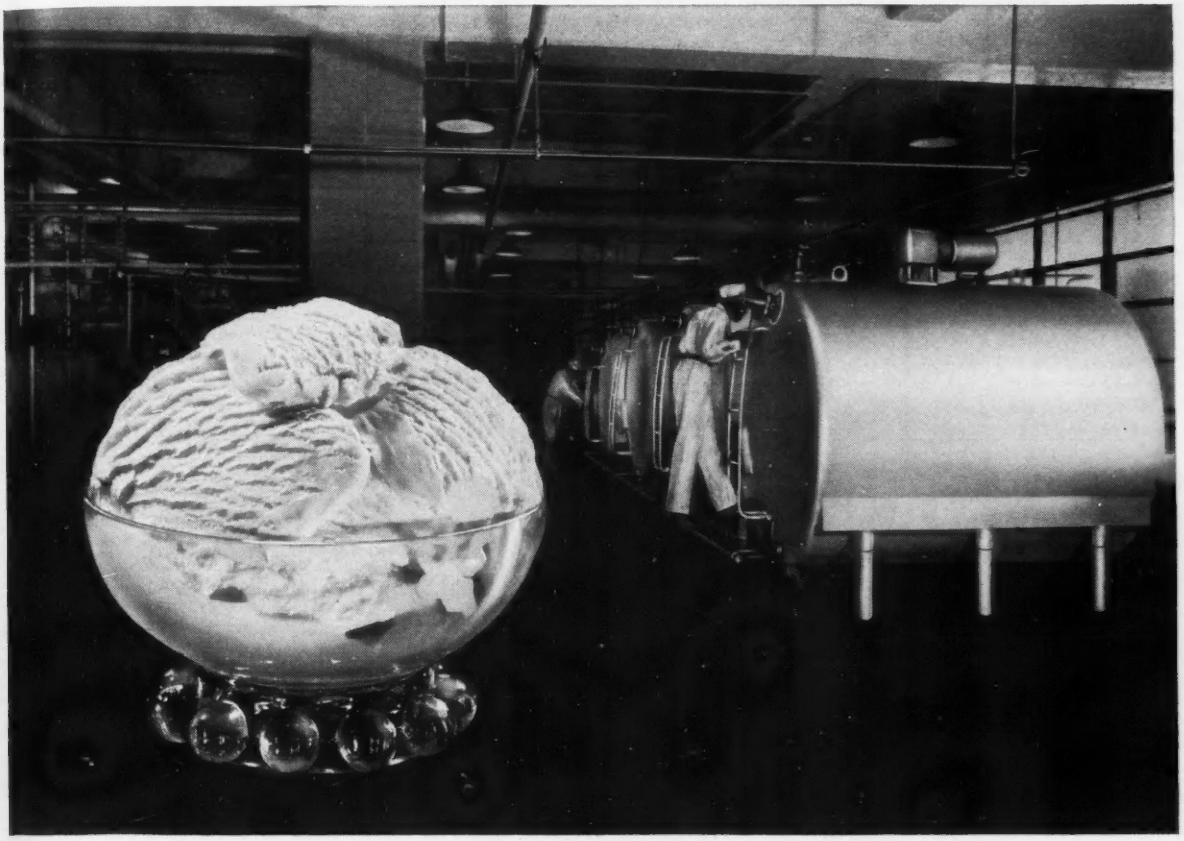
Honey
Cooking fats

News of State Associations

Arkansas Dietetic Association. On March 6, the Arkansas Dietetic Association held a dinner meeting in Little Rock. Margaret Gillam, Dietetics Specialist, American Hospital Association, conducted a round table discussion on "Dietetic Institutes." A number of food service workers were guests.

The Arkansas Dietetic Association this year is one of the co-sponsors, together with the Arkansas State Board of Health, the Arkansas Hospital Association, and local physicians and hospital staffs over the state, of a series of Dietetic Institutes for Food Service Supervisors and Subsidiary Workers.

Institutes have been held in conveniently located hospitals in different areas. To publicize the meetings and encourage attendance, the staffs of all hospitals near the host institution have been notified in advance by letter. Personal visits by the Dietitian Consultant employed by the State Department of Public Health just before the institutes have increased attendance, also. In addition, it is planned in the future to send a questionnaire to each locality prior to an institute to stimulate interest and to learn what will be of most value to those attending.



What happens when Vitamin meets machine? Analysis shows that the food value of ice cream is not affected by processing.

UNTIL recently, the food value of ice cream was calculated from the total nutrients of its individual ingredients. Calculated values did not rule out the possibility of nutrient losses during preparation and processing. In 1948, the first complete *analytical* study of all the nutrients in the finished product was published.* Comparison showed the analytical values to be similar to the calculated ones in most cases, slightly higher in others.

Particularly gratifying was the higher vitamin A value brought out by analysis. This was the result of using summer cream in the analyzed samples. However, the figure is thought to be representative, since most of the ice cream manufactured during the winter is made from summer cream held in frozen storage. This helps to insure a product uniform in carotene and vitamin A all year around. Vitamin A and carotene are needed by everyone for healthy eyes and skin. Research studies show that eighty-four percent of the carotene originally present in ice cream remains even after storage, as a part of the experimental procedures, for as long as seven months.**

Because its nutrients appear to be little changed during manufacture or storage, ice cream may be depended upon to furnish many of the elements necessary to good everyday nutrition—high quality protein; calcium; phosphorus; and the important vitamin, riboflavin, in a form which is almost 100% available for body use.

More and more, scientists are recognizing ice cream's vital contribution to the daily diet. Each year, Americans enthusiastically consume about 35 pints per person. And always, behind the scenes, research continues to bring to light still greater physiological benefits from this popular, nutritious food.

*Dahlberg, A. C. and Loosli, J. K. *Nutritive value of commercial ice cream.* J. Am. Diet. Assn. *24*:20 (Jan.) 1948.

**Holmes, A. D., Kuzmeski, J. W., and Canavan, F. T. *Stability of vitamins in stored ice cream.* J. Am. Diet. Assn. *22*:670 (August) 1946.

National DAIRY COUNCIL

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Programs have been planned according to the greatest needs of the hospitals in the particular locality. Thus, much of the planning has been done by local people, with suggestions from the state's consulting dietitian. It has been found by experience that only a limited amount of subject matter can be covered well in one-half or one-day meetings. Particularly effective have been demonstrations, films, and other visual aids. Talks by physicians, hospital superintendents, dietitians, nutritionists, and sanitarians are usually included.

Return visits by the consulting dietition to hospitals whose personnel have attended these institutes have shown improvements directly attributable to information gained at the institutes. In addition, those who have attended these meetings are unanimous in asking that similar institutes be held in their area at regular intervals.

California Dietetic Association. At the March meeting of the *Bay Section*, Dr. Edgar Munter, Associate Chief of Medical Staff, Mount Zion Hospital, and Chief Medical Director at the Hebrew Home for the Aged, spoke on "Diet for the Aged." Marjorie Heseltine, U. S. Children's Bureau, Washington, spoke about plans for the A.D.A. convention to be held in Washington. A representative from E. R. Squibb & Co. also spoke of the company's new products and showed a film, "Malnutrition in the Hospital Patient."

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Our soups and our other foods for low sodium diets are noted for appetizing flavor and nourishing goodness. That is why you can use them for general feeding. Only the salt is left out. The soups are especially adaptable used in gravies and as flavoring for meat, since *you* can control the amount of salt used.

The following is a partial list of Bernard Quality Products, best and most economical to use. See how your patients enjoy our rich foods with low sodium content and see how you save by adding your own salt for general use.

NO SALT ADDED
Chicken Soup Base
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NO SUGAR ADDED
Gelatin Desserts
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District of Columbia Dietetic Association. The D. C. Dietetic Association has begun publication of a quarterly mimeographed newsletter titled "Potomac Post." A committee of six has been appointed to edit and publish it.

Dr. Hazel K. Stiebeling, Chief, Bureau of Human Nutrition and Home Economics, U.S.D.A., spoke to sixty members of the D. C. Dietetic Association and their guests from the Home Economics Association at the January meeting. Dr. Stiebeling, the only woman appointed to the National Nutrition Advisory Committee, and representative of the world Food and Agricultural Organization, emphasized the demand for nutrition technicians, especially those who can speak foreign languages and have traveled abroad. She explained the organization of the Bureau of Human Nutrition and Home Economics and told about some problems of the Bureau—for instance, revision of food composition tables giving forty nutrients instead of the former twelve; and the difficulty in determining accurate food composition due to lack of reliable methods.

Eldon E. Sweezy, Training Officer, Civil Aeronautics Administration, in cooperation with the D. C. Dietetic Association, has conducted a course on supervisory action. Group discussions were held on: how to plan your work, select employees, teach a job, appraise employee work performance, assign work effectively, handle complaints, simplify work methods, duties of a supervisor, causes of human behavior, motivation of employees, and foundations of effective discipline. "Clinic" sessions were held at the close of the meetings to deal with specific problems. At the close of the course, diplomas were presented to seventeen "students."

Delaware Dietetic Association. A dinner meeting of the Delaware Dietetic Association was held on March 20 in Wilmington, with an attendance of twenty-one. Home economists in food work were invited to attend. The speaker of the evening was Marguerite Pettee, who talked on "Association Activities."

Illinois Dietetic Association. The Illinois Dietetic Association was a sponsor, along with the Indiana, Wisconsin, and Michigan Dietetic Associations, of the dietetic section meetings at the Tri-State Hospital Assembly held on May 3 in Chicago. At the first session, a panel discussion was presented on "Guides in Operation of Hospital Food Service" with emphasis on small hospitals unable to employ a full-time dietitian. Chairman of the panel was Marian C. Jones, Institutional Nutritionist, Indiana State Board of Health, Indianapolis. Following this session, Dr. L. H. Newburgh, University of Michigan, spoke on "Evaluation of Obesity and Its Significance."

At the morning meeting of the Illinois Dietetic Association the following day, Dr. George E. Wakerlin, University of Illinois College of Medicine, spoke on "Advances in the Causes and Treatment

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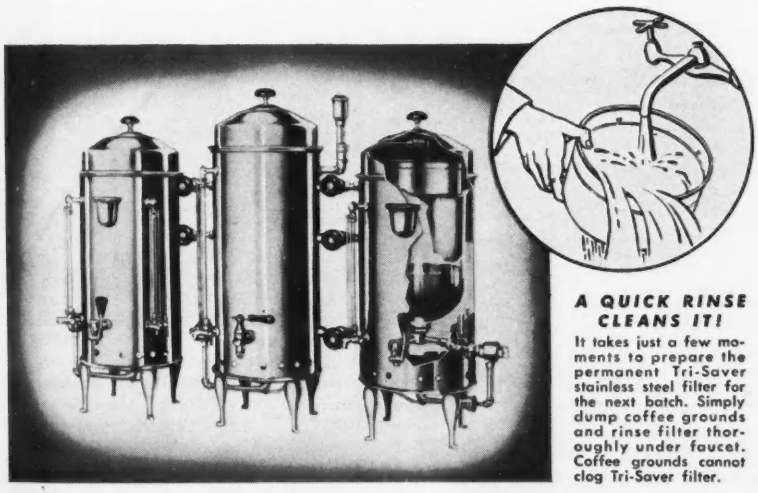

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It takes just a few moments to prepare the permanent Tri-Saver stainless steel filter for the next batch. Simply dump coffee grounds and rinse filter thoroughly under faucet. Coffee grounds cannot clog Tri-Saver filter.

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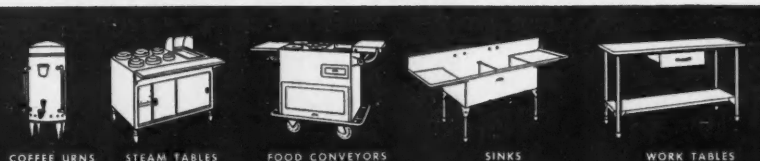

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of Hypertension." He was followed by Dr. Hoylande D. Young, Director of Information Service, Argonne National Laboratory, whose topic was "The Atom in the News." In the afternoon, the program was devoted to administrative problems. Pearl Janssen, Associate Professor of Home Economics, University of Illinois, spoke on "Advances in Techniques of Food Preparation," and John T. Lynch, Director of Personnel Training, Consolidated Grocers Corporation, Chicago, talked on "Work Simplification and Job Analysis."

The Illinois Dietetic Association has conducted a writing contest for dietetic interns this year, and a prize of $25 is to be awarded to the intern submitting the best article of 1000 words or less on "Quality Food." In addition, the prize-winning article will be published in the Illinois Dietetic Association Bulletin.

The *Eastern Illinois Dietetic Association* on January 10 entertained dietitians from Danville, Champaign, and Urbana as guests. The chief topic discussed was "Ways and Means of Assisting the Public Relations Committee." Marjorie McKean Fisher was elected president of the group, to succeed Mary Goff.

The *Mississippi Valley Dietetic Association* met in Davenport, Iowa, on March 1 for a mid-winter meeting.

Indiana Dietetic Association. On March 11 about forty Indiana freshmen and sophomore college girls with their instructors attended the annual Career Day for students interested in dietetics at the Indiana University Medical Center, Indianapolis. A trip through the hospitals at the Medical Center was included and a children's diabetic outpatient clinic was conducted by Dr. Wendell Brown, assisted by Dr. Robert Sappenfield. Gwendolyn Wylie of the Indiana University Medical Center told about her life as a dietetic hospital intern, and Sarah Williams, administrative intern, described an administrative internship. Dorothy Yates, staff dietitian at Methodist Hospital, Indianapolis, told of a therapeutic dietitian's duties, and Elizabeth Huey, dietitian at L. S. Ayers & Co., spoke on dietetics in the commercial field.

Kansas Dietetic Association. On March 18, the Kansas Dietetic Association met in Topeka. In the morning, two sessions were held—one on hospital facilities service, the other on school lunch. At the first, Roy N. Johnson, Acting Director of Hospital Facilities, Kansas State Board of Health, talked on "Hospital Construction Program," and Mary Alice Streator, Dietitian, Santa Fe Hospital, Topeka, discussed "The Role of the Dietitian in Hospital Construction." At the school lunch session four talks were given:

"Nutritional Status of the School Child" by Dr. Abby Marlatt, Associate Professor of Foods and Nutrition, Kansas State College, Manhattan

"The Effect of Diet on Dental Caries" by Dr. Marie Zepplin, Assistant Professor of Nutrition, Kansas University

"Eating Habits and Attitudes Toward Food" by Dr. Manuel Escudero, Children's Division, Menninger Foundation Southard School

"Problems and Their Possible Solutions in the Kansas School Lunchroom" by Ruby Scholz, Assistant Director, School Lunchroom of Kansas

At the luncheon, Elizabeth Perry, A.D.A. President, was the featured speaker, and at the afternoon business meeting, she discussed Association affairs. The last address on the program was by Hildegard Knopp, Administrative Dietitian, University of Kansas Medical Center, who talked on "Hospital Food Cost Accounting."

The Kansas and *Kansas City Dietetic Associations* cooperated with the American Hospital Association in planning a booth for the Midwest Hospital Association meeting in Kansas City, April 12 to 14. The theme of the exhibit was the Master Menu planned for small hospitals with limited dietary staffs. The new fact sheet, "Dietitians Today," and the folder, "Introducing Your Hospital Dietitian" were distributed. The new booklet on diabetic diets, "Meal Planning," was also displayed.

The Kansas City dietitians have participated in two spring meetings on vocational guidance. On March 31, vocational guidance counsellors and home economics teachers of the greater Kansas City area were guests at the University of Kansas Medical Center. The A.D.A. Kodachrome slides were shown, and the recording prepared by the Professional

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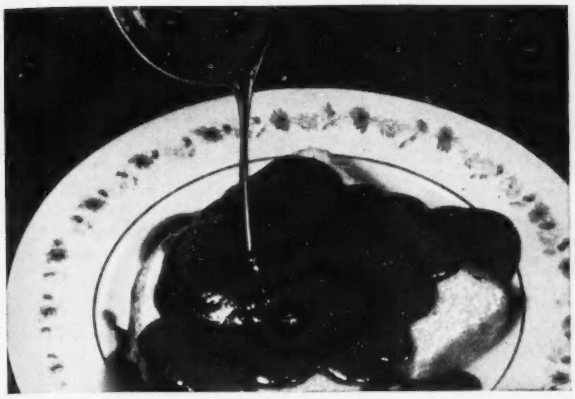

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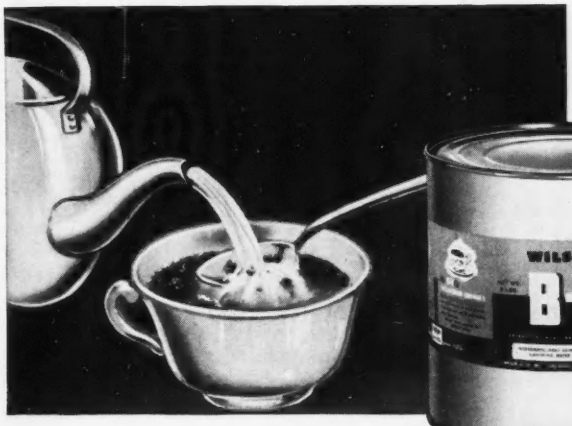

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Education Section of the Kansas Dietetic Association for high school students was played. In the recording a college freshman returns to her home town, and tells her friends what she had learned about the profession of dietetics. A tour of the nutrition department was included as part of the program, and the visitors were given copies of "Introducing Your Hospital Dietitian."

On April 22, the Kansas City Dietetic Association participated in a Career Day at the University of Kansas City, which was held for high school students interested in fields related to home economics. The A.D.A. Kodachrome slides and the Kansas recording were again featured, and the small A.D.A. exhibit, "Dietetics —A Career for Better Living" was used. Copies of "Dietitians in Demand" and "Double Feature" were distributed.

For the December meeting of the *Kaw Valley Dietetic Association* food customs of other lands, particularly those related to the New Year, were discussed. Lolan Yee told about Cantonese food and Melvia Lee spoke about food customs in Hawaii. Genoveva Ramirez' report was on Puerto Rican food habits.

The *Wichita Dietetic Association* officers are: President, Arline Thomas; Vice-President, Helen Newkirk; and Treasurer, Dillia Steiner. The Wichita dietitians have chosen as their project the compilation of a simplified standard diet manual for use in all Wichita hospitals. Each hospital donates the time of one or more of its dietitians to attend the weekly committee meetings. When the work is completed, the diets will be submitted to the Sedgewick County Medical Society for approval before printing. After acceptance, it is planned that in each hospital the diets will be recorded on visible index forms and placed at stations throughout the buildings for use by the doctors and nurses.

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Massachusetts Dietetic Association. The Massachusetts Dietetic Association and the New England Hospital Assembly heard a panel discussion on "Modern Thinking in the Dietary Department" at a joint meeting in March. Charles Wynne, Superintendent, Waterbury Hospital, was leader of the panel. Speakers were:

Margaret Gillam, Dietetics Specialist, American Hospital Association, who spoke on "Food Cost Control with Minimum Records for Its Efficiency"

James Hamilton, Professor of Hospital Administration, University of Minnesota, who discussed "Methods of Food Distribution and the Effect on Food Costs"

Milford W. Wall, S. Blickman, Inc., who talked on "Equipment Control from the Standpoint of Selection—Methods and Efficiency"

The following evening Miss Gillam discussed "Responsibilities of the Dietitian" with members of the Massachusetts Dietetic Association at a meeting in Boston at Simmons College.

Missouri Dietetic Association. A Nutrition Symposium was presented by the Missouri Dietetic Association in cooperation with the Community Nutrition Section on March 22 at the Washington University Medical School Auditorium. The program centered around family feeding and new advances in the field. It included the following talks:

"How to Make Nutrition Education Effective" by Dr. Charles Glen King, Scientific Director, Nutrition Foundation, Inc.

"Nutrition in Pregnancy" by Dr. Willard Allen, Washington University School of Medicine

"Providing an Adequate Diet for the Diabetic Child" by Dr. Alexis Hartman and Dr. William G. Klingberg, Washington University School of Medicine

"Feeding the Family" by Dr. Ann deHuff Peters, and Helen Brazell, Washington University School of Medicine

"Studies on Iron Excretion—Implications Concerning Iron Requirements" by Dr. Carl Moore, Washington University School of Medicine

"Recent Advances in Nutrition" by Dr. Charles Glen King

Elizabeth Perry, A.D.A. President represented the national Association at this meeting.

New York State Dietetic Association. The combined meeting of the New York State Dietetic and Home Economics Associations was held April 27, 28, and 29 in Buffalo. On the first day of the

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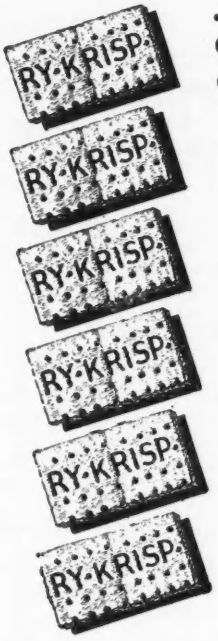

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meeting, Elizabeth Perry, A.D.A. President, was the speaker at the opening luncheon, which was followed by a workshop divided into two sections: one on administrative problems, the other on community education.

On Friday, the morning meeting was devoted to a Professional Education Program, while in the afternoon the Diet Therapy Section presented speakers. In the evening a joint banquet with the home economists featured Jean Rindlaugh as speaker. Her topic was "How to Make Your Life More Fun."

For the Saturday morning joint session Dr. Harry Giles, New York University, addressed the group on "Human Relations in the World Today." The meeting was concluded with a joint meeting, at which the Honorable Orlo M. Greeves spoke on "America Beyond the Crossroads."

The workshop technique was used at the February meeting of the *Rochester Dietetic Association*. The program on "Personnel Problems" was planned by the Food Administration Section. In a brief orientation, Helen Griffith Ingerson discussed and demonstrated group discussion techniques. A panel of experts drawn from the membership, introduced the topic, after which the meeting was divided into small groups, each assigned one of three topics to discuss: (a) human relations program in the dietary unit; (b) training of employees; and (c) use of non-professional or subsidiary workers. Following a 20-min. group discussion, the secretary of each group gave a report and presented problems which had been raised. The panel discussed each report, and many comments were made from the floor. Several concrete suggestions were made on the use of visual aids, more personal contacts of the dietitian with her employees, and the efficient use of non-professional employees. Members indicated a desire for a local survey on employee wages.

In the area of Vocational Guidance, the Rochester Association has been active, too. On March 3, Mrs. Ingerson, President of the Rochester group and Chief Dietitian, Rochester General Hospital, was featured on a 15-min. radio program. Questions and answers about dietetics were directed to homemakers interested in careers for their daughters. The opportunities in dietetics, the training required, and sources of further information were stressed.

Mary Murphy, of the *Syracuse Dietetic Association* and Head Dietitian, Crouse-Irving Hospital, will participate with Syracuse University students in a series of radio programs titled, "So You Want to Get A Job." Development of a diet manual is another recent activity of the Syracuse group.

Ohio Dietetic Association. Members of the *Cincinnati Dietetic Association* were guests of the Cincinnati Academy of Medicine for their April meeting. Dr. Hilde Bruch, Associate in Psychiatry, College of Physicians and Surgeons, Columbia University, spoke on "The Psychology of Eating." At a seminar with Dr. Bruch, therapeutic dietitians presented dietary case problems for discussion.

The *Cleveland Dietetic Association* held a recruiting program and tea in March at the St. Luke's Nurses Home Lounge. Invitations were sent to ninety-three high schools and colleges. In April, at a joint meeting with the Cleveland Home Economics Association, Dr. Robert E. Savage, Professor of Chemistry and Chemical Engineering, spoke on "Plastics and Their Uses."

Oklahoma Dietetic Association. On March 24 and 25, the Oklahoma Dietetic Association met in Oklahoma City. The program was as follows:

"New Implications in Nutrition" by Dr. Marietta Eichelberger, Director of Nutrition Service, Evaporated Milk Association, Chicago

"Emotional Problems in Dietetics" by Dr. G. H. Guthrey, Clinical Director, Community Mental Hygiene Clinic, Oklahoma City

"Feeding Problems to Be Considered in the Cardiac and Diabetic" by Dr. R. C. Lawson, Department of Medicine, University of Oklahoma Hospitals, Oklahoma City

"Purchasing in Small Hospitals," by Kenneth F. Wallace, Business Administrator, University of Oklahoma Hospitals

"Socialized Medicine" by Richard Graham, Secretary, Oklahoma Medical Association

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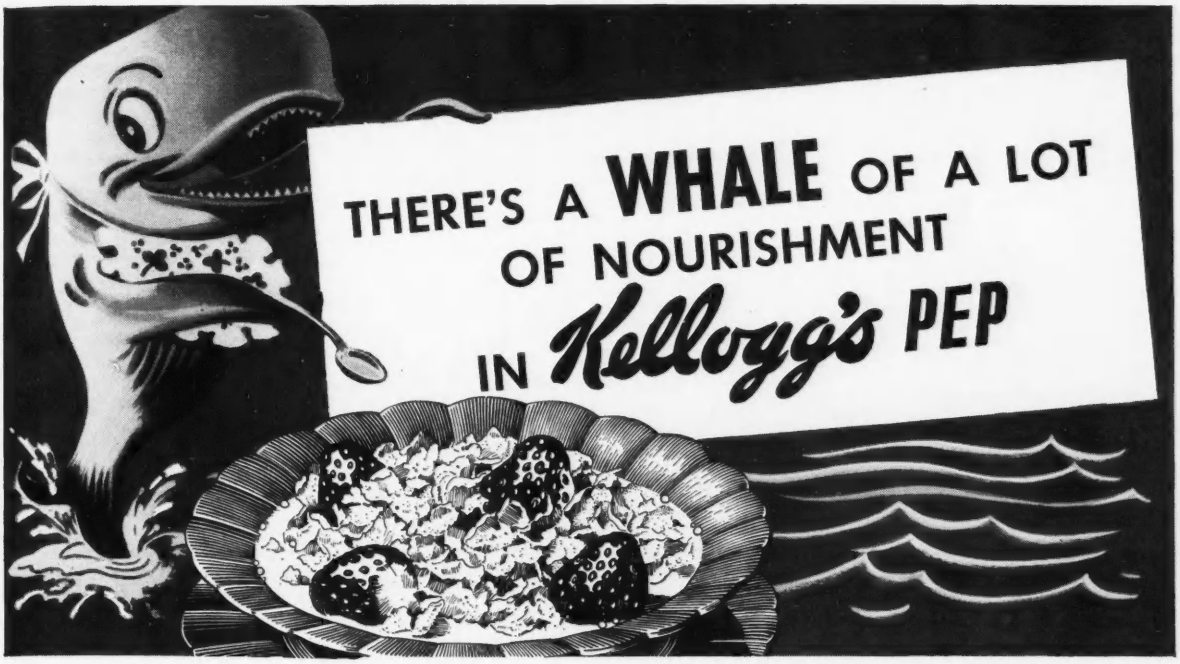

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"Community Nutrition Today" by Dr. Gladys Kinsman Lewis, Colorado State Health Department, Denver

"Personnel Relations" by Glen Smith, Professor and Head, Trade and Industrial Education, Oklahoma A. & M. College, Stillwater

"New Trends in Equipment and Planning"—Sabra Kennedy, Designing Engineer, Southern Equipment Company, St. Louis

"The Latest in Processed Foods" by Mildred Clark, Home Service Supervisor, Oklahoma Natural Gas Company, Oklahoma City

One of the features of the convention was an exhibit of rats with weight charts and case histories to show the effect of a good diet. "Mr. and Mrs. Whiskers," who thrived on a diet of milk, meat, fruits, vegetables, cereals, fish, cheese, and eggs, were very playful. In contrast, "Mr. and Mrs. Sad Sack" ate nothing but candy, potato chips, soda, cookies, and cakes. Mr. Sad Sack died, leaving his mate to mope alone.

South Dakota. At a special organizing meeting on March 17 and 18 held in Huron, South Dakota, dietitians took steps leading to final affiliation with the American Dietetic Association. With the help of Margaret Ross, A.D.A. Professional Activities Director, application for affiliation was made out, and it has now been submitted to the Council of the House of Delegates for approval. At the meeting, the following officers were elected: President, Sister Inez, Sacred Heart Hospital, Yankton; President-Elect, Lennoe Perkins Wilkinson, Miller; Secretary-Treasurer, Sister Alma, St. Joseph's Hospital, Mitchell. A project on public relations and vocational guidance for high school and college students was also planned.

Dr. Lida Burrill, South Dakota State College, Brookings, was the speaker at the professional session on the second day of the meeting. She spoke on "Nutritional Status of Women over Thirty." J. Evans, Sanitary Engineer, described the classes for food handlers sponsored by the State Health Department and showed a U. S. Public Health Service film on sanitation.

Texas Dietetic Association. The *Dallas Dietetic Association* has included a variety of interests in their meetings for the year. The officers are: President, Charlotte Clark; Vice-President, Virginia Magliola; Secretary, Eileen Ehrhardt; and Treasurer, Virginia Rogers. A tour of the new Huey-Phillips kitchen equipment manufacturing plant comprised the first meeting of the year. The way stainless steel steam tables, work tables, and refrigerated counters are planned and built was explained to the group. At another meeting the Dallas Diabetes Control Board held a panel discussion regarding its work among the general public in the detection of individual cases of diabetes. One meeting on "Know Your Money" was little aside from the field of dietetics, but was most informative. An employee of the Federal Reserve Bank of Dallas talked on the various types of currency which have existed in the U. S. from its beginning and also on counterfeit money and some ways of detecting it. An excellent and entertaining book review of *A Taste of Texas* and a Christmas season bingo party were two of the high lights of the year. To climax an active year, the Dallas Dietetic Association was hostess to the Texas Dietetic Association Convention on April 13, 14, and 15.

Association Activities

Revision of State Constitutions. Since the Constitution of the American Dietetic Association was revised last October, changes have also been made in the Model State Constitution. This revised model has been sent to all of the state associations, and already eleven states have submitted their proposed revised constitutions for approval by the By-Laws Committee of the House of Delegates.

Revised Manual for State Officers. The revision of the *Manual for State Officers* has been completed, and it is now being reviewed by the By-Laws Committee of the House of Delegates. The *Manual* will be available soon.

Representatives to State Meetings. The following official representatives will attend state meetings during the month of May:

Winifred H. Erickson, North Dakota (Grand Forks), May 10.

Marguerite L. Pettee, Georgia (Savannah), May 12

Alice H. Smith, Arkansas (Hot Springs), May 30–31. This is a joint meeting of the Arkansas Hospital Association and the Arkansas Dietetic Association.

Exhibits of A.D.A. At the Biennial Nursing Convention to be held in San Francisco May 8 to 11, A.D.A. is presenting an exhibit. It is an adaptation of the "Food for Health" exhibit for which a low-calorie diet has been substituted for the diet of the ten-to-twelve-year-old child. The Bay Section of the California Dietetic Association will have charge of the exhibit. A mimeographed leaflet listing the menus exhibited will be distributed, as will the A.D.A. List of Publications and Reprints and "Dietitians Today."

A.D.A. also displayed materials from the Loan Library at the spring meetings of the New York State and Pennsylvania Dietetic Associations.

Fifth National Conference on Citizenship. A.D.A. will take part in the Fifth National Conference on Citizenship to be held in Washington, D. C., May 22 to

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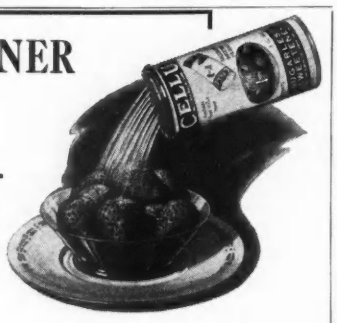

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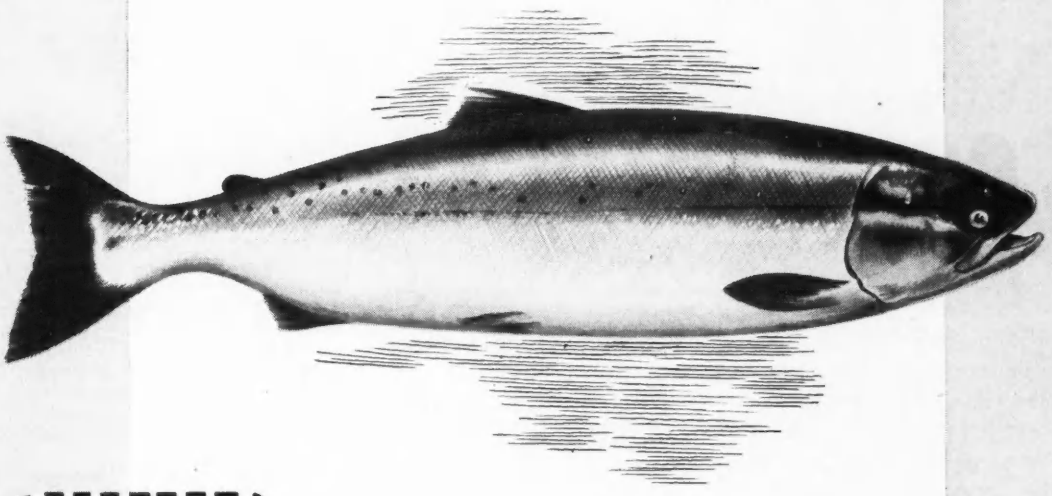

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Nutritive value in average* serving of canned salmon

Nutrient	Quantity	Percentage of Daily Recommended Allowance**	Rating as Source of Nutrient
Food Energy (1)	168 calories		
Protein (1)	24 gm.	34	Excellent
Calcium (1)	204 mg.	20	Excellent
Iron (1)	0.68 mg.	6	Fair
Riboflavin (B_2) (2,3)	0.18 mg.	10	Good
Niacin (3,4)	8.5 mg.	57	Excellent
Vitamin D (3)	565 I. U.	—	Excellent

*4 oz (113 grams) **Percentage based on Recommended Daily Allowance of physically active man—National Research Council.

1. Food Research *11*, 391 (1946)
2. J. Nutrition *28*, 123 (1944)
3. J. Nutrition *34*, 633 (1947)
4. J. Nutrition *28*, 107 (1944)

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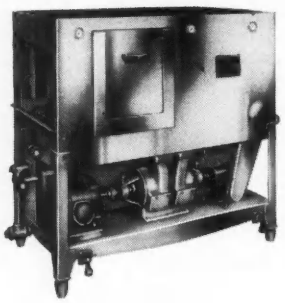

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4800 dishes per hour

Model R-4
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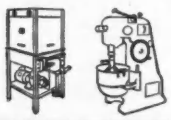
9000 dishes per hour

COLT AUTOSAN



DISHWASHING, SANITIZING, DRYING and MIXING MACHINES

24. Our representatives will be Gladys Stoddart, Capt. Katherine Manchester, and Rosemary Lodde. The Conference will be under the joint sponsorship of the National Education Association and the U. S. Department of Justice.

Women's Bureau Brochure on Dietetics. The galley proofs of the new brochure, *The Outlook for Women in Dietetics*, have been received in the A.D.A. office. This bulletin was begun two years ago by the Women's Bureau with the aid of our Association, and particularly through the efforts of our Executive Secretary, Gladys E. Hall. A complete description of the work and opportunities for dietitians and nutritionists is presented in the bulletin. Announcement will be made when this vocational guidance aid is available in its final form.

Skidmore College Conference. A.D.A. was invited to participate in a conference at Skidmore College, Saratoga Springs, New York, on April 24. Our representative was Gladys E. Hall. The faculty of the Departments of Home Economics, Physical Education, and Nursing at Skidmore are interested in studying the possibilities of giving fuller emphasis in the curriculum to the professions of dietetics, occupational therapy, and physical therapy. To this end, a conference was arranged between faculty members in these departments and representatives of the national associations of the professions concerned.

Public Relations Meeting. The A.D.A. Chairmen of Public Relations, Vocational Guidance, and Educational Exhibits will meet in Chicago early in May to become acquainted with our new Public Relations Director, Thelma Pollen, and to make plans for the remainder of the year.

A.D.A. Letter Opener. Another possibility has been added to the gift list for A.D.A. members. Since the paperweight with the A.D.A. seal was introduced several months ago, a letter opener has also been made available. It is made of heavy bronze and is $7\frac{3}{4}$ in. long. A $\frac{3}{8}$-in. seal is placed on the handle. The attractive letter opener costs only $1.50.

Tuberculosis Bibliography Ready. One of the projects of the Diet Therapy Section which was completed last year was the preparation of an annotated bibliography on diet and tuberculosis through the years 1930–1947. This has now been mimeographed and is available for 20 cents a copy from the Association office.

New Reprint List Available. The spring revision of the A.D.A. List of Publications and Reprints is off the press. Many new reprints from the JOURNAL and all of the vocational guidance and public relations literature are now included. The reprint list has been enlivened by a striking change in color scheme. It is now printed on gray stock with maroon ink. Copies are available free on request.

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News of Advertisers and Exhibitors

A new food chopper has been developed by *G. S. Blakeslee & Co.* which has a quick cutting action, allowing clean cuts without crushing or mashing the meat. A slicer attachment is available which can be used with slicer, shredder, julienne, or grater plates. The new chopper comes in three sizes to grind from 8 to 30 lb. per minute.

Flex-Straw Corporation has announced that its disposable drinking tube with the flexible angle is available in individual wrappings.

The *Amcoin Corporation* is now featuring a new "all glass interior" mass-production coffee-making unit that eliminates metal contamination and the human element in coffee making, including repouring. The units are available in capacities from 20 to 200 gal., serving from 800 to 4000 in one coffee-making.

In March *Amcoin* celebrated the silver anniversary of its founding in 1925. The company was started after research and development of the "all glass interior," which is the outstanding feature of the company's products. In the intervening years, its line has been expanded and now consists of coffee-making units in sizes from 1 to 200 gal.; chocolate-making units; fruit juice dispensers with automatic agitation; and iced tea dispensers.

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International Minerals & Chemical Corporation has appointed two food consultants to alternate as editors of its new monthly publication, "News Notes in Cooking," the first issue of which came out on February 15. The alternate editors will be Emily Chase Leistner, who will edit the publication from the West Coast one month, and Joan Rock, who will prepare it in the East the next month. Emily Chase was formerly Home Economics Editor of *Sunset* Magazine and edited the *Sunset Cook Book of Favorite Recipes*. Miss Rock was formerly Dean of Home Economics at Pratt Institute, Brooklyn, and is now a consultant home economist.

Wyandotte Chemicals Corporation has recently introduced two new sanitizing compounds—Spartec and Tri-Bac—which brings to five the sanitizing compounds in its line. Both new products contain quaternary ammonium germicides. Spartec is ordinarily used at the rate of 1 fluid oz. (2 Tbsp.) to 4 gal. water—200 p.p.m. of active agent. It is a clear, odorless, colorless, non-corrosive solution and will not water-spot glassware. It gives effective results on many operations in 30 seconds and can be used at any temperature, because boiling does not lower its potency. It is recommended for general sanitizing operations following a thorough cleansing with a modern detergent. Tri-Bac is recommended for dairy farm use.

Wyandotte has also developed two new detergents for washing laboratory glassware. "Dural H" washes thoroughly in hard water, produces little or no etching, and dissolves laboratory glassware at rates from two to thirty-three times slower than standard detergents. "Dural M" has been developed for machine washing of laboratory glassware.

The 103-year life of the *John Van Range Co.* was celebrated in an exhibit titled "Then and Now," along with seventy-five other Cincinnati manufacturers at the Queen City's Centurama held February 13 to March 4. The company was founded by the son of Chauvin, who fled from France to Canada after an unsuccessful campaign to bring Napoleon back from St. Helena. The son changed his name, taking the last syllable of his father's name—as the French pronounce it (not as they spell it)—Van.

Doughnut Corporation of America has recently opened a new research laboratory in New York City. The new laboratory includes a "pilot" manufacturing plant complete even to a miniature flour mill. There is also a training center for bakery, production, and sales employees and a bake shop in which the company's products can be tested.

S. Blickman, Inc., has announced the appointment of Benjamin Weintraub to its staff of hospital consultants. Mr. Weintraub was formerly in charge of the hospital program of the New York office of the architects, Skidmore, Owings, and Merrill. As Blickman consultant, Mr. Weintraub will be of special help to hospitals in selecting equipment, and he will aid in planning layouts to improve work-flow and efficiency.